June 5th -
Grosse Isle.

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COOPER ORNITHOLOGICAL CLUB

CONTENTS

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THE COOPER CLUB MEMBER AND SCIENTIFIC WORK*

By HAROLD C. BRYANT

AT THE END of each year the merchant takes an inventory of his stock and makes plans for future business. In the same way, it seems to me, such an organization as the Cooper Ornithological Club can well afford to take the time to consider in review its accomplishments of the preceding year and to outline its policies for the coming year. It is therefore fitting that tonight we should look into the past, estimate where we stand at the present, and with the data from these two sources as a foundation, formulate working plans for the future.

We cannot pride ourselves on being an old organization, for we will only have reached our majority next June. It was on June 22, 1893, that four youthful but earnest bird students met in San Jose and organized the Cooper Ornithological Club, naming the organization after that pioneer student of birds in California, Dr. J. G. Cooper. The charter members were W. H. Osgood, H. R. Painton, Chester Barlow and F. A. Schneider, the four constituting the first officers of the Club. By the end of the first year the Club's membership numbered twenty-five. "The Nidiologist", an amateur bird magazine, several numbers of which had already appeared under the editorship of Harry R. Taylor, formerly of Alameda, was taken over as the official organ. In 1897 the "Nid" suspended publication, and it was not until a year later that the first "Bulletin" of the Cooper Club was issued. During the interim "The Osprey", another amateur ornithological magazine, issued at Galesburg, Illinois, was used as the publishing medium of the Club, the notes being edited by D. A. Cohen. After a year the "Bulletin" of the Cooper Ornithological Club was named THE CONDOR, and under this name is now well known as a magazine of western ornithology.

In 1894 members of the Club residing in southern California obtained per-

*President's address, delivered at Northern Division meeting, Cooper Ornithological Club, March 19, 1914.

mission to hold separate meetings in their locality. For a time the southern organization was known as the "Annex", but has latterly been known as the Southern Division. One need only point to the harmony that has always existed between these two really separate organizations to show the character of the membership of the Cooper Ornithological Club. The jealousy and attendant ill feeling that so often exists under similar circumstances has been almost wholly absent.

The worth of a thing is often proved by testing it. The loyalty of Cooper Club members was put to the test in the early days. It was some of the younger members, who, against the protest of the more conservative, dared to start the publication of a bulletin. It was the same young contingent which through the years of 1899-1901 helped to make up the cash deficit resulting from the small membership roll in those initial years.

Such then were the beginnings. Now as to our present status: We have a membership at the present time of 439. Nor is our membership limited to California, for we have representatives living in all the principal countries of the world. The centralization of activities is shared by two divisions, one in southern California with meetings held each month in Los Angeles, at the Museum of History, Science and Art, and the other in the San Francisco Bay region, with monthly meetings held at the Museum of Vertebrate Zoology in Berkeley. A bi-monthly periodical, THE CONDOR, is published, which last year totaled 246 pages for the volume and which we are told by naturalists abroad, is not excelled in general worth by any other ornithological paper of its class.

The purposes of the Cooper Ornithological Club as stated on its official letter-heads are as follows:

For the observation and co-operative study of Birds, because of the resulting pleasure;
For the spread of interest in Bird Study, so that this pleasure may be shared by others;
For the conservation of Birds and Wild-life in general, for the sake of the future;
For the publication of Ornithological Knowledge, as being a contribution to Science.

These then are our ideals. Every member should be acquainted with these ideals and do his best to further them, or else the Club fails of its objects. I am sorry that I cannot discuss each one of the four. This being impossible, I have done the next best thing and attempted to treat in detail of one phase of the work of the Club. It deals perhaps more closely with the last named object—the publication of ornithological knowledge as being a contribution to science, but it has ramifications which necessarily include the other objects above mentioned. It is on the Cooper Club member in relation to scientific work that I wish to speak.

If we follow the general trend of the research work carried on by members here in California we find that it can be classified as follows:

1. Collecting of bird skins, nests, and eggs.
2. Preparation of local lists.
3. Recording of field observations, such as migration and nesting dates, and habits.
4. Systematic descriptions of new species and races and systematic position of groups.
5. Photography.
6. Faunistics, or the study of distribution.
7. Economic investigations.
8. Conservation of wild-life.

This sequence is a natural one. "It is characteristic of the progress of research that as one proceeds the horizon widens and new questions spring up in the pathway of the investigator." I should say also that it is a progressive one. By that I do not mean that the former problems have been solved or that these first ones were of less importance, but that more difficult ones have been discovered and given prominence. It is because of this very progressivism that scientists the world over are so optimistic.

It has been an evolutionary trend, a trend from work requiring little skill or coming to the individual most naturally, to work requiring more skill and more concentration of purpose. Let us pass in review some of these problems which have interested and are interesting members of the Cooper Club.

Collecting specimens naturally formed the foundation on which the more advanced work has been accomplished. In the early days collecting was of the desultory type. An egg or two from a nest, with little or no recorded data, was sufficient to give the oologist a standing. Now not only is the whole set considered requisite, but in critical cases a parent bird and the nest as well, is preserved along with fully written notes as to circumstances, exact location, date and collector. A specimen or two of each species of bird was sufficient for the early collector. A *series* of each of the more interesting species or of a particular group is now the ideal. As in other sciences the time for specialization has arrived. It is now no longer worth while for the younger member of the Cooper Club who is beginning to collect, to build up a collection of all of the birds of the state, or of the eggs of all of the birds of the state. Rather should the attempt be made to restrict collecting to a particular group in which the student is interested and is likely to be able to contribute actually new knowledge. The aim should no longer be *quantity* but *quality*.

The study of plumage cycles forms a field almost wholly neglected. We do not know the sequence of plumages even of some of our commonest ducks. Let the collector of bird skins specialize, therefore, and, by obtaining a complete series, place before us the information necessary to fill in this gap in our knowledge.

The variation in size, shape, color and color pattern of the eggs of a particular group of birds furnishes an intricate problem and one worthy of more attention than it has as yet received. Nor have we exhausted the possibilities as regards the finding of yet undiscovered nests and eggs. The nest and eggs of the Harlequin Duck, Saw-whet Owl, and Crossbill have never been taken in California, although these species are known to breed within the state.

Here then are two important problems which claim the attention of him who follows that instinct which is so strong in most of us, that of making collections, be they of birds, birds' nests, or birds' eggs, or all three.

If there is anything in our work that we have possibly overdone, it is the plain faunal list. No worker in ornithology will for an instant underestimate the value of the faunal list. Nevertheless, he must admit that the value of such a list increases in proportion to the annotations. The mere locality list of species is of prime importance only when it comes from new localities, and not all of us are able to seek out such. The annotated list, on the other hand, seldom affords a duplication and always offers a comparison of life-history notes. It also has historical value, for it usually affords basis sooner or later for a study in the change in the status of birds. AVIFAUNAS of the type of Willett's "Birds of the Pacific Slope of Southern California" and Tyler's "Birds of the Fresno District" must be held up as models of the kind of work

most needed. They give authoritative facts about the birds of the district treated, and are extremely useful. Such AVIFAUNAS should be printed in large enough numbers so that they can be furnished to every interested school teacher and student of birds in the district covered.

In spite of the fact that the recording of field observations, such as migration and nesting dates, has been carried on systematically by some of our members since the formation of the Club, yet it is astonishing to find how limited our knowledge of the life-histories of many of our native birds really is. This has been especially apparent to me as I have, during the past year, attempted to obtain information on the life-histories of our game birds. The first striking discovery was the extremely small amount of detailed facts on record; the second was the lack of specific information where it was most needed. To illustrate: An attempt was made to assemble statistics as regards the nesting dates of the California Valley Quail, to serve as a basis for correctly placing the open season. When on the track of records I would repeatedly run across such statements as "during the summer, while working in a hay-field I discovered five quail nests". In such a statement three important details are lacking,—the exact species, the exact date, and the exact locality.

We find, therefore, that we have not yet discovered very much of what birds do. Even though we see far enough ahead to know that our next step will be to find out *why* they do certain things, yet it is well that we still emphasize the gathering of those facts which must act as a foundation for more advanced problems. We have not outgrown this phase of our activity and we never will. We should, on the other hand, more largely emphasize it during the coming years and, above all, improve the accuracy and compass of notes taken and recorded.

In spite of the fundamental need for the services of the man who attempts to put in systematic order our knowledge of the relationships of birds, the old type of systematist is passing away. Apparently the lure of modern biological problems, in which the immediate bearing is more clearly seen, deters many from remaining in this field. The man who improves our classification and nomenclature lays the foundation without which the so-called higher types of investigation cannot be carried on. Just one case in point: The present trend of investigation on the origin of species,—the problem which has longest interested the biologist,—toward the isolation theory awaits a more dependable classification of animals at the hand of the acute systematist at this very moment. We may have come to the point where the description of a new species is seldom justified; but the extent of variation, intergradation, and geographical distribution of our different species furnishes problems to the systematist that are most important. Biologists are describing about 10,000 new forms annually. Whatever may be said as to the advisability of such a proceeding, it gives us an idea as to what an immense field the biologist has in which to work.

We are at the present time seeing just the beginning of a new science which deals with the relation of animals to their environment, and this science we call ecology. The ecologist must necessarily depend almost entirely upon the systematist for workable material. Here then is a plea for men who are willing to remain below ground, as it were, out of the light while they lay the foundation. Current recognition may not give due credit to the systematist, but time will prove the worth of his service.

Of recent years a new type of naturalist has joined our ranks, namely, the

camera hunter, or more properly, the hunter with a camera. It is needless to point out that nothing has been more useful in promoting interest in and diffusing knowledge about birds than the photograph. Many a reader of a magazine, be it ornithological or otherwise, will imbibe what knowledge he can by looking at the pictures even though he never takes time to read a text description. Pictures leave a more lasting impression than does descriptive writing. Let me also call to your attention the fact that good photographs are practically as reliable in establishing records as are skins. Read Dawson's "Identification by Camera" and see the accompanying photographs in the November-December CONDOR, if you want to be convinced. Ray and Heinemann's Pine Grosbeak photographs are really much more valuable in establishing the breeding record of this bird than the nest and eggs themselves, for whereas the original nest and eggs can only be seen by a few people at most, and will ultimately be lost or destroyed, the photographs have convincingly demonstrated the record to thousands and will in the end be more permanent. The life-history-of-the-sharp-shinned-hawk series which appeared in the last CONDOR is another beautiful example of valuable photographic work. There is no reason why a rare collection of negatives should not be just as valuable, if not of actually much more value, than a collection of skins or eggs. The one drawback to the collecting of photographs appears to be the expense attached thereto. However, the day is not far distant when even those in more humble circumstances will be able to indulge, for already the brave are making their own Graflex and Reflex cameras.

The economic phase of ornithology has been largely neglected by Cooper Club members. This is especially evident when we view the work of the United States Biological Survey and then inspect the meagre notes to be found in our western publications. This Bureau of the United States Department of Agriculture has within the last seventeen years examined the stomachs of nearly 75,000 birds and tabulated the contents found, and has published 135 documents relating wholly or in part to the food of birds. Somehow at this day and age the convincing value of a live bird lies in its usefulness. This usefulness is computed on its food habits and the consequent value to the agriculturist. Doubtless this point of view is exaggerated and the other real value,—the esthetic,—is left in the background; but we must meet the demands of the times.

What do birds eat? Observation says that the Western Meadowlark eats grain almost exclusively. Stomach examination shows that this bird eats insects almost exclusively except during the time when the numbers of insects are at a minimum. Casual observation and inferential reasoning says that the Roadrunner eats the eggs and young of quail and other birds. Stomach examination of over twenty-five of these birds taken in localities from which complaint comes has failed to disclose a feather or an egg-shell.

Ducks have been slaughtered by the millions in California and yet when the man who desires to propagate ducks wants to know of what their food in the wild is made up, the answer must be given in general rather than specific terms: "largely vegetable—seeds and grasses". But of what kinds?

Is it not more important just at the present time to know what birds *eat* than when they arrive, how they act, or how many eggs they lay? The farmer wants to know what the Barn Owl's average catch of gophers is, whether the number of insects destroyed by the Western Meadowlark will more than coun-

terbalance the damage caused to sprouting grain, and whether the grosbeak can pay for the fruit destroyed by its destruction of scale and other insects.

If we are to meet the demands of the day, therefore, we must concentrate some of our energy on the solution of the economic problems connected with birds. The collector should by all means save stomachs and so doubly justify the killing of the birds collected.

Nor is the food habits of birds the only economic problem. The fast disappearance of our game birds is creating a loss to the state that is not fully appreciated at the present time. It took many years to successfully arouse public opinion in regard to another of our natural resources, forests. It may take a similar period of time to draw proper attention to the need for the conservation of our wild life, but it must be done. Every member of the Cooper Ornithological Club should be an active conservationist, for upon whom can the burden be shifted? Surely not upon those who take no active interest in bird-life. Those who are intimately acquainted with the facts must not only be the experts with the evidence but must be the prime movers in an active campaign to preserve the relatively scanty remnant of wild-life which is left.

I am glad to be able to recall to your attention that the Cooper Club has during the past year taken a definite and active stand for the conservation of wild-life. Growing out of the appointment of a committee on conservation by the Northern Division, one of our members, Mr. Walter P. Taylor, was instrumental in organizing the California Associated Societies for the Conservation of Wild Life, of which the Cooper Club is now a member. Not only did much of the time and energy of some of our members go into the recent campaign but also some of our funds. As a result, this associated society has been able to bind together about 10,000 persons who are pledged to carry on a campaign of education and to stimulate legislation in behalf of this great natural asset. The recent campaign waged during the last session of the state legislature, although somewhat disappointing, has certainly showed us the enemy in all his strength. We are therefore in a better position to renew the attack and to carry it to a finally successful issue.

I have now pointed out some of our achievements and attempted to show their relative merit. If I should go still farther and attempt to prophesy as to the future scientific work of the Club, I would say that it will be largely characterized by the use of the experimental method. The present-day trend of biology is in that direction and it is to be expected that ornithologists will follow this lead. Another reason why this method is going to be used in the future is because we have come up against that big question,—why do birds do this and why do birds do that;—and the only logical way of attacking that problem is to use the experimental method.

One does not need a laboratory nor even apparatus in order to perform an experiment. Nor is it necessary to keep the birds experimented upon in captivity. In the laboratory of nature may be found both subject and apparatus. However, there rests on the performer of the experiment the duty of furnishing the originality and foresight demanded and the ingenuity to be used in the arrangement of controls. The road which leads to a better knowledge of life-histories and the mysteries of migration is to be built upon experimental method.

Workers in science are often justly criticized because they seldom make the product of their endeavor available to the general reader. The populari-

zation of science will still further justify it. In our own case, it is the one fundamental way of attaining our second ideal—the spread of interest in bird study. Why truths must be couched in language that only a few can understand is incomprehensible. If it is necessary that scientific treatises on birds be of a technical nature then they should be paralleled in every case with a popular account. The spread of interest in bird study comes from such popular accounts and not from technical reports framed by and for the specialist.

In conclusion let me suggest that, if you have not done so, you add to the simple pleasure that comes to you through bird study the scientific spirit which urges us to use scientific method in our work. The aim of the scientist is to make "durable, trustworthy records of natural phenomena." The method, according to Minot, is first to record truly everything dealing with the phenomenon itself. Here is work for the amateur. Second, to verify and correlate the personal knowledges until they acquire impersonal validity. Here is work for the professional. I hope, therefore, that in this review each member has been able to recognize a niche suited to his personal ability and inclination, in which to work and to become useful in the gathering of facts concerning wild-life. Just as soon as you find such a place to work, and adopt such ideals towards which to strive, just so soon you become a scientist in the true sense of the word and as a result become a more useful member of the Cooper Ornithological Club.

Let me close with this quotation of Coward's from his "Migration of Birds", as an added inspiration to do productive scientific work: "But putting aside economic and utilitarian considerations there is to some of us a greater stimulus to solve the problems of nature. With the birds, and the insects and plants upon which they feed, we share a common heritage, and the more we learn of the life of these, our fellow-workers, the nearer we approach solution of the great riddle of the Universe, the mysterious law-abiding scheme of Nature. The book of knowledge to which we add some iota is marred with mystery, superstition and error, but each proved fact cleans its pages. 'Facts', says Laing, 'are the spokes of the ladder by which we climb from earth to heaven.'"

Museum of Vertebrate Zoology, Berkeley, California, March 19, 1914.

BIRD NOTES FROM NETARTS BAY, OREGON

By STANLEY G. JEWETT

WITH FIVE PHOTOGRAPHS BY O. J. MURIE

THE FOLLOWING notes were taken at Netarts Bay and along the seacoast north of Netarts postoffice to Cape Meares Lighthouse, in Tillamook County, Oregon, during four visits to that locality for the purpose of collecting specimens and securing data on the birds found along that part of the Oregon coast. This work has been carried on by the Oregon Fish and Game Commission under the direction of William L. Finley, State Game Warden. The plan is to make a thorough biological survey of the state and build up a careful scientific collection of birds and mammals.

The first visit, September 1st to September 11th, 1912, Mr. M. E. Peck, of Willamette University, Oregon, and I were in the field continually for ten

days. The second trip, December 27, 1912, to January 13, 1913, I was accompanied by Mr. O. J. Murie of the Fish and Game Commission during the entire period, and by Mr. Peck from December 27 to January 13. During this trip, we experienced some severe storms, especially that of December 28 and 29, when the rain and sleet fell in torrents accompanied by a strong wind. The third and fourth visits, from March 9 to March 21, and May 14 to May 20, 1913, I was accompanied by Mr. Murie for the entire period. During these two trips a part of the time was devoted to collecting small mammals.

The list contains the water and shore birds only. The land birds are omitted until more thorough work can be done in the surrounding territory at a season when the breeding birds are present.

Specimens of all the species listed were secured with the exception of Great Blue Heron (*Ardea herodias*), Killdeer (*Oxyechus vociferus*) and Amer-

Fig. 34. View of Netarts Bay, Oregon.

ican Coot (*Fulica americana*), but these three were seen to such advantage that their identity was absolute.

Netarts Bay on the coast of Tillamook County, Oregon, is about six miles in length and from one to three miles in width (see fig. 34). Most of the shore line rises abruptly from the water, leaving no beach at high tide, although during the seasons of low tide a large part of the water recedes from the bay leaving extensive mud flats. On the west the bay is cut off from the ocean by a narrow sandspit, which averages not over half a mile in width. On the bay side of this spit a narrow "salt grass" tide flat extends north about four miles from the southern end of the bay. Most of the sandspit is barren of vegetation except a narrow belt of stunted pine (*Pinus contorta*), huckleberry, and a few scattered willows on the higher parts. Dense forests of spruce, hemlock and fir, with an undergrowth of salmonberry, cover the hills on the

south and east of the bay. A wide, smooth, sandy beach extends north of the bay to Maxwell Point about two miles distant; from this point north several miles the beach is broken by high ragged cliffs and several outlying rocks (see fig. 35), the principal of these being Three Arch Rocks, a National Bird Reservation.

Aechmophorus occidentalis. Western Grebe. A single example was found dead on the beach January 2. This species is evidently common on Netarts Bay at certain times during migration, as local residents are quite familiar with the species.

Colymbus auritus. Horned Grebe. First seen September 9, when Mr. Peck shot a female while it was feeding in the shallow water close to shore. No others were seen during September, but during the periods from December

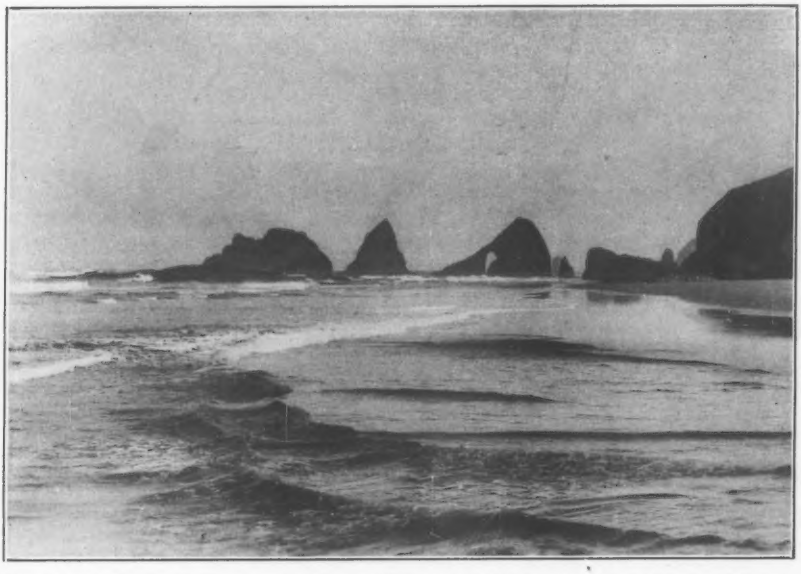

Fig. 35. Inshore Rocks, in vicinity of Three Arch Rocks, Tillamook County, Oregon.

26 to January 12, and March 9 to March 21, this little grebe was continually in sight, either flying low over the water or diving for food in the clear water of the bay.

Gavia immer. Loon. Not positively identified during September, but found in considerable numbers during January and March. This Loon was observed several times while it was fishing in the bay, and was seen to dive and catch fish of considerable size; when a fish of four or five inches in length was caught, it was held in the bill and violently shaken several times before being swallowed. Common during May.

Gavia stellata. Red-throated Loon. Several were seen during the last few days of December and early January. A specimen secured on January 1, showed a patch of red feathers on the throat. All seen were diving and feeding along the bay shore.

Lunda cirrhata. Tufted Puffin. Puffins were fairly common about the rocky cliffs near Cape Meares on September 3, but none were seen flying later than September 7. A single example, in winter plumage, partly decomposed, was found half buried in the sand on the ocean beach on December 31. Abundant again in May, when specimens in breeding plumage were secured.

Cerorhinca monocerata. Rhinoceros Auklet. Several dead and two exhausted birds of this species were found on the ocean beach between January 1 and 10.

Ptychoramphus aleuticus. Cassin Auklet. A number of these birds were found dead on the beach between December 26 and January 10, new ones washing in with nearly every tide. Not a single live bird of this species was seen.

Phaleris psittacula. Paroquet Auklet. A single example found dead on the ocean beach by Mr. Peck on January 1.

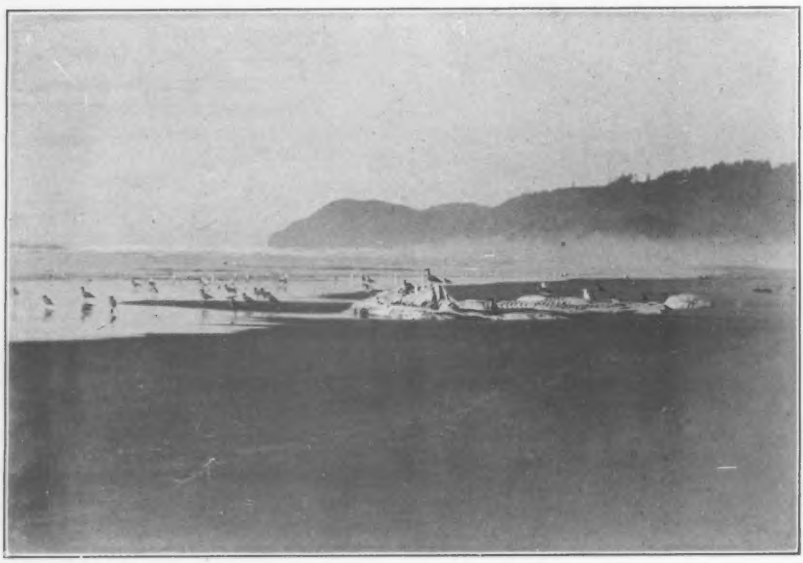

Fig. 36. Western Gulls about carcass of whale on coast of Tillamook County, Oregon.

Synthliboramphus antiquus. Ancient Murrelet. Three were found dead on the rocky beach near Maxwell Point on January 2.

Cepphus columba. Pigeon Guillemot. A small young just changing from the downy plumage was found dead on the ocean beach on September 1. During May they were commonly seen feeding in the surf and occasionally in the bay near Netarts postoffice. A few were seen and one secured on May 19 on the rocks about the caves at Short Beach, where no doubt a few remain to breed.

Uria troille californica. California Murre. Murres are abundant off the coast of Tillamook County, Three Arch Rocks being their principal nesting place. During the first week of January several dead specimens were picked up on the ocean beach, and two were caught alive in a badly exhausted condi-

tion. All those seen in January had more or less of an oily substance coated in the feathers of the under parts, but whether or not this oily substance was the direct cause of their death, I am unable to say.

Larus glaucescens. Glaucous-winged Gull. This species was seen commonly during January. It was usually found with the still more common *L. occidentalis.*

Larus occidentalis. Western Gull. Common both along the ocean beach and on the bay. During low tide hundreds of these gulls congregate on the exposed mud flats where they find an abundance of food. The birds also catch many crabs in the shallow water, carrying them to the smooth, sandy beach, where they are torn apart and devoured. I have seen this gull tear open the breast of a surf-scoter and eat the entire body, leaving the skin. At other times the gulls will feed only on the eyes and brains of a bird, leaving the body.

Fig. 37. NORTHERN PHALAROPE IN WINTER PLUMAGE.

They also eat fish and other animal matter thrown up by the tide, caring little whether it be fresh or decomposed, thereby proving their great value as scavengers (see fig. 36).

Larus californicus. California Gull. Large numbers of this gull were seen on Netarts Bay on September 8, when a series of skins was collected.

Larus brachyrhynchus. Short-billed Gull. Seen but once, on January 2, when two were seen, one of which was secured.

Rissa tridactyla pollicaris. Pacific Kittiwake. A single example was found dead on the rocky beach near Cape Meares on March 13.

Fulmarus glacialis glupischa. Pacific Fulmar. Several specimens were found dead on the beach from January 1 to 10, and the skins were preserved, showing the dark, mottled and light phases of plumage.

Phalacrocorax penicillatus. Brandt Cormorant. Common on the bay during September when specimens were secured.

Phalacrocorax pelagicus resplendens. Baird Cormorant. Common on the bay at all times. Seen feeding several times in the surf near the rocks at Maxwell Point.

Mergus serrator. Red-breasted Merganser. This beautiful merganser was common on the bay in January and from March 9 to 21. On December 28, a young male was shot by Mr. Peck as it flew from a small creek, near the bay shore. During our stay in the locality from March 9 to March 21, the species was seen daily swimming and diving in search of food in the more shallow parts of the bay. A fine pair in spring plumage was secured in March.

Dafila acuta. Pintail. These ducks congregated in immense flocks on the bay during the early part of September, but remained only a few days. Two young females shot by Mr. Peck, were found to be suffering from some kind of parasite; the entire fleshy parts of the breasts were full of small worms.

Marila valisineria. Canvasback. This, the most famous of American game ducks, was found in considerable flocks from December 27 to January 12. They usually fed in the shallow water close along shore during low tide, but were ever watchful and at the least sign of alarm the flock would rise and fly to some more secure place.

Marila affinis. Lesser Scaup Duck. It was ever a pleasing sight to see these trim little ducks swimming about the bay. No matter how large a flock it was the birds were never scattered about, but always massed together when at rest or feeding in the shallow water along shore. During the stormy weather of December and January this species outnumbered all other ducks on the bay, and from March 9 to 21, a large number of the ducks seen were of this species.

Clangula clangula americana. Golden-eye. Common on the bay, in both January and March. This duck is probably the most shy of all those wintering on Netarts Bay. They secure their food by diving, and usually stay well out in the bay while feeding.

Charitonetta albeola. Bufflehead. This dapper little duck is common on Netarts Bay all winter, a few were seen in September, and during January and March they were quite common. They are expert divers and secure their food in this way.

Histrionicus histrionicus. Harlequin Duck. On September 9, as I was climbing over some rocks just above the roaring surf, I saw a small brown duck bobbing up and down in the surging water between two high mussel-covered rocks. As it rose on a high wave I shot. Later when it washed ashore, I found it to be a female Harlequin. On March 16, Mr. Murie secured a fine adult male in bright plumage. When first seen this individual was sitting on a ledge just above the surf where it had evidently come to rest. On March 18 three others were seen, and on March 19 one was seen. All were along the rocky beach near Cape Meares. In swimming the Harlequin sits high on the water and holds the tail at a high angle.

Oidemia deglandi. White-winged Scoter. This large scoter was abundant on the bay in January and March but was not seen feeding in the surf like *O. perspicillata.* Upon rising from the water the wings make a loud whistling sound much like the Golden-eye in flight. It secures its food by diving, and stays under water a remarkably long time. The stomach of this species

is exceedingly large and upon examining several I found an amazing collection of shells and other remains of marine life.

Oidemia perspicillata. Surf Scoter. This beautiful black and white scoter was seen during each of my visits to Netarts. Only a few were seen in September, but by December 27 they had become abundant and were still plentiful in March. During calm weather when the bay is smooth, one can watch these expert divers at work securing their food from the bottom of the bay.

Branta canadensis minima. Cackling Goose. Large numbers of geese rest on Netarts Bay during fall and winter. Flocks of considerable size were seen in December, January and March. Several species no doubt occur, but as specimens were not secured of any but *B. c. minima,* no others were positively identified. I was told of one occurrence years ago when two hunters killed several hundred geese in one day, simply picking the feathers from them and leaving the bodies to the gulls. On March 20 I saw several small flocks of *minima* alight on the middle rock of the Three Arch group where they evi-

Fig. 38. Hudsonian Curlew.

dently went to rest during their northward flight. On March 20 a female weighing four and a half pounds was shot as it flew low over the beach.

Ardea herodias. Great Blue Heron. This heron is of regular occurrence on the mud flats about the bay during low tide. It was seen at different times on all four of my visits to the bay.

Fulica americana. Coot. It seems hard to account for the scarcity of Coots on Netarts Bay, when they are abundant on Tillamook Bay only a few miles north. On January 1, Mr. Peck found a dead one on the beach, but no others were seen.

Phalaropus fulicarius. Red Phalarope. A single example was seen and secured on September 1. It was feeding on the sandy beach in company with Northern Phalaropes.

Lobipes lobatus. Northern Phalarope. Abundant on all sandy beaches from September 1 to 11. These little fellows were the most gentle and confiding of all the shore birds on the beach, often allowing me to approach with-

in a few feet of them while they ran about over the wet sand in search of sand fleas (see fig. 37). Common again in May.

Recurvirostra americana. Avocet. A single specimen secured by Mr. Peck on September 10.

Arquatella maritima couesi. Aleutian Sandpiper. This species was first taken in Oregon when a specimen was secured on the rocks near Cape Meares on December 31, 1912. No others were seen at the time, although on March 18, two others were taken at the same place. (See CONDOR XVI, 1914, page 93.)

Pisobia bairdi. Baird Sandpiper. A few of these sandpipers were found along the wet beach in September, but were not plentiful at any time.

Pisobia minutilla. Least Sandpiper. From September 1 to 11 these little fellows were abundant in large flocks.

Pelidna alpina sakhalina. Red-backed Sandpiper. This beautiful sandpiper was found in large flocks in company with the Western Sandpiper on the ocean beach during our visit in May.

Ereunetes mauri. Western Sandpiper. This was the most abundant sandpiper on the beach in September and in May. Flocks of from a few individuals to a hundred or more were seen daily along the sandy beach. When feeding they follow the receding waves on the run, taking wing before the next wave reaches them, then repeating the same thing over and over again.

Calidris leucophaea. Sanderling. Sanderlings were found in large flocks on the sandy beaches in September. On January 1, Mr. Murie secured several specimens on the sandspit and others were seen on March 14, while during May they were common.

Totanus melanoleucus. Greater Yellow-legs. A single specimen was taken and another seen by Mr. Peck on the mud flats of the bay during low tide in September.

Heteractitis incanus. Wandering Tattler. This bird was fairly common from September 1 to 11 about the rocky beach north of Netarts Bay and also on some half-submerged stumps along the bay shore. Not more than three were ever found together. Several were seen in May.

Actitis macularius. Spotted Sandpiper. Two or three were found about the mouths of small streams flowing into the bay, from September 1 to 11, and a single example was seen and collected on the ocean beach in September. Common in May.

Numenius hudsonicus. Hudsonian Curlew. Three were seen and one secured by Mr. Peck on the ocean beach on September 9, and several were seen during May (see fig. 38).

Charadrius dominicus dominicus. Golden Plover. A single bird was collected on the ocean beach on September 7. It was alone and no others were seen.

Oxyechus vociferus. Killdeer. One was seen by both Mr. Murie and Mr. Peck on December 28. It was flying over a fresh water creek that flows into the bay.

Aegialitis semipalmata. Semipalmated Plover. During September and May this plover was common in small flocks along the sandy beaches and occasionally on the mud flats of the bay during low tide.

Aegialitis nivosa. Snowy Plover. Common on the wide sandy beaches at all times. This plover can run exceedingly fast and tracks measured by Mr.

Peck showed each stride to be six inches in length when the bird was running fast.

Aphriza virgata. Surf-bird. On December 31, a cold, stormy day when the sleet-laden wind dashed the ocean spray high up on the rocks, we found a small flock of these hardy birds near Cape Meares, feeding about on the more sheltered rocks in company with a flock of Black Turnstones. The place was visited again in March, but no Surf-birds were seen.

Arenaria melanocephala. Black Turnstone. During September this species was seen several times feeding on the sandy ocean beach to the north. During January and March the birds were found only on the rocky beach, where a flock of ten or twelve was seen each time the place was visited.

Haematopus bachmani. Black Oystercatcher. This strange, shy bird was seen every time I made my way among the rocks in the vicinity of Cape Meares. Found usually in two's or three's, but on January 2, I saw a flock of a dozen or more. The Oystercatcher feeds on the marine life found growing on the rocks and to my knowledge never seeks food in any other place. The species was fairly common during May. It is known to breed on Three Arch Rocks.

State Fish and Game Office, Portland, Oregon, February 18, 1914.

A SADLY NEGLECTED MATTER

By ALLAN BROOKS

IN THAT best of all collector's manuals, Ridgway's "Directions for Collecting Birds", published in 1891, there occur the following passages in describing the preliminaries to skinning the specimen:

"No measurements are necessary since all measurements of scientific value are best taken from the dried skin. * * * Then if there are any noteworthy features as to color of soft parts they should be carefully noted, this being a very important matter and one sadly neglected by collectors."

How often have I recognized the truth of the last remark when examining the labels of birds collected by American ornithologists. In my own collection not two per cent other than those taken by myself have any data as to color of soft parts. The worst offenders are the ornithologists of California. Among several hundred skins, collected by a dozen or more men, mostly well known to science, only *one* has any record of this sort,—a California Woodpecker collected in the early eighties and which bears the simple legend "eyes white".

Specimens taken by European collectors usually have very complete data in this respect, and all their works of reference pay especial attention to the subject. As an instance I may cite Oates' "Game Birds of India", a tiny duodecimo volume intended for the use of the sportsman. In its small compass eighty-eight species of upland game birds are treated: Habits, recognition marks, descriptions, nidification, measurements, weights, and, in nearly every species, a full record of colors of soft parts.

The utter indifference of even the best ornithologists of America to this "very important matter" has been brought home to me rather forcibly by a

couple of experiences during the past year. While making illustrations for the forthcoming "Birds of California" I had the privilege of the loan of some valuable material from the Museum of Vertebrate Zoology at Berkeley, but was sadly handicapped by the complete absence of all data relative to the vanished color of the bills, feet, and irides. In the case of a Flammulated Screech Owl I might have colored the iris yellow as in other American members of this genus, as there was nothing to guide me on the label of this most valuable specimen, collected by no other than Mr. Grinnell.

The only bird of this species I had seen in the flesh was too far gone in decomposition to afford any data. Neither Ridgway's *Manual* nor Coues' *Key* gave any help, nor did Dr. Merriam's description of the subspecies *idahoensis*, taken by his own party, and the accompanying figure indicated a pale yellowish brown iris.

Fortunately at this juncture there came a memory of a field note in THE CONDOR by that excellent observer, Mr. F. C. Willard, and on turning over a file of back numbers it was found in volume XI, page 201. "The most striking feature to me was the mild look of her face, which appeared very different in aspect from that of other owls I had met with. Presently I discovered that this was due to the eyes, which instead of having a yellow iris as in other owls were a dark chocolate brown."

The other case in point appertained to a friend who was collecting material for a leading Eastern ornithologist. I had previously myself collected for a close friend and fellow worker of this gentleman, who gave me particular instructions to collect all data as to the soft parts, and for whom I had made some hundreds of detailed drawings illustrating these. I advised my friend to be very particular in this regard; judge my surprise when he informed me later that his patron had told him to omit all data relative to the color of soft parts from the labels, but to note the length in flesh, and expanse! Now this ornithologist is a doctor and therefore well aware of the great difference the amount of relaxation that the muscles may be subjected to would make; length in flesh, even if somewhat variable, might be of some value, but of what earthly use is a record of *expanse?* A relic of Pre-Cuvierian days, now relegated to the columns of the local weekly in recording the "tip-to-tip" of the last eagle killed by the country sportsman—with a foot or two thrown in for good measure.

If the color of soft parts was always noted it would simplify the separation of many closely allied species. As an instance, take the case of *Junco phaeonotus palliatus* and *Junco phaeonotus dorsalis,* which are only allowed sub-specific distinction. If the color of the bill and irides was noted on the labels of all these compared, it would probably be a simple matter to distinguish them as they are evidently specifically distinct.

The Red-backed Junco (*dorsalis*) has the pinkish bill and dark claret colored iris of all northern juncos, and it hops like a junco. The Arizona Junco (*palliatus*) has a black upper mandible and a pale yellow lower, with the brilliant yellow iris of a Golden-eye drake. Its motions are just as different from other juncos as its eyes and bill are, as it walks daintily and deliberately over the floor of the forest like a tit-lark or water-thrush, instead of the shuffling hop of the juncos and sparrows.

The writer is well aware that absolutely different colors of irides can obtain in the same species, such as in the tit-mice of the genus *Psaltriparus;* but

such types are extremely rare, and offer in themselves a large field of research in studying the laws of variation and heredity.

Another deterrent factor in the noting of colors is that many collectors distrust their ability in this regard. They assume that a trained eye, a knowledge of the various tints, and the names of all the pigments are necessary. This is not the case; all that is needed is the ability to distinguish the ordinary colors. These can be qualified by the simplest of prefixes,—"dark", "light", "dull", "bright", or "intense",—or modified by a terminal such as "bluish" to indicate something akin to blue. The description should be as concise and brief as possible; too elaborate details are apt to tangle one up. Also it is hardly necessary to define the color of the eyes of all such small birds that have the ordinary brown iris, nor to record the black bill and feet of most of the Corvidae, for example. It is the *divergence* from the ordinary type that is noteworthy.

Some few collectors make elaborate records of the colors of soft parts in their note books, leaving the label of the particular specimen they make the record from, blank in this respect; this is a method greatly to be condemned; one might almost as well record the sex in this manner, as one never knows the ultimate destination of the specimen in future years—or centuries.

Make all records on the label itself; probably the most convenient way is to record the colors of soft parts on the reverse side of the label to that which carries the name, sex, locality, and date. Without these data the specimen is incomplete, a monument during the whole period of its existence to the lack of thoroughness of its collector, no matter how perfect it may otherwise be.

Okanagan Landing, British Columbia, March 4, 1914.

NESTING OF THE KITTLITZ MURRELET

By JOHN E. THAYER

RECENTLY I had the good fortune to obtain from Captain F. E. Kleinschmidt, eggs of the Kittlitz Murrelet (*Brachyramphus brevirostris*), together with some interesting information regarding the breeding habits of the bird. I think, although I am not sure, that these are the first authentic eggs of this species. I have heard only of the white eggs, the same as the one already in my collection, which evidently are not of the Kittlitz Murrelet.

The egg found on the ground, on the side of Pavloff Mountain, June 10, 1913, has a ground color of olive-lake, dotted all over with different sized markings of dark and light brown. It measures, in inches, 2.29x1.40. The other egg, taken from the oviduct of a bird May 29, 1913, is perfectly formed, and was evidently about to be laid. Its ground color is yellow glaucous, with dark brown spots over the whole egg. The measurements are, 2.46x1.45. The second egg taken from a bird's oviduct was so broken that it could not be measured, but color and markings are the same as in the one last described. I have both the females from which these eggs were taken.

Pavloff Bay and Pavloff Volcano, Alaska, where Captain Kleinschmidt's notes and specimens were taken, is near the west end, and on the south side, of the Alaska Peninsula, a little northwest of the Shumagin Islands.

This is what Captain Kleinschmidt says:

During my recent expedition, I spent the time between the first and middle of May cruising in Chatham Strait, Icy Strait and Glacier Bay. Among other specimens, we collected quite a few Marbled Murrelets and also several Kittlitz Murrelets. It was the height of the breeding season of these two species, for we found in every specimen fully or partly formed eggs, most of which, however, were broken in the collecting. However, I preserved, of the Kittlitz Murrelet, one fully formed and colored egg, besides several broken ones.

I had no previous data or reference with me other than "*North American Birds' Eggs*", by Chester A. Reed, and this gives on page 16 the data of Capt. Tilson: "Kittlitz Murrelet—a pure white egg found in a hollow under a bunch of rank matted grass on Sanak Island, June 25, 1899."

I am sending you the broken egg, the whole egg, and both parent birds from whose oviducts they were taken, so you may properly describe and measure them for yourself. I have long doubted the authenticity of the Tilson data, and it seems strange to me that the Kittlitz Murrelet, which so closely resembles the Marbled, should lay such widely different eggs.

On June 5, while lying at anchor off Pavloff Bay, Alaska Peninsula, a trapper and miner came aboard, who saw me preparing skins of the Kittlitz and Marbled murrelets. He recognized the Kittlitz immediately, and said it was strange that a water bird should lay its egg far inland, high on the mountain sides, in the snow. Upon closer questioning he said he meant that the egg was laid, not on the snow, but far above timber line on the mountain, in bare spots, amid the snow. In the sixteen years he had been there he had found but two eggs, but he remembered well the eggs and bird. I had him describe the egg carefully before I showed him the one I possessed, and it tallied with his description.

On June 6, I was hunting brown bear for the Carnegie Museum, in company with this man, and while crossing a high divide, a Kittlitz Murrelet flew past us. "There is your bird", called the trapper immediately; "it has a nest here somewhere". On June 10, I saw with my glasses a she-bear and two cubs far up in the snow of Mount Pavloff. To reach them, I had to climb several miles inside the snow line, with only here and there a few bare spots to give me a much desired walking ground, when close to my feet rose a Kittlitz Murrelet. There on the bare lava, without even the pretension of a hollow, lay a single egg.

Eight years ago, when I shot my first Kittlitz Murrelet in the ice pack of Bering Sea, an Eskimo looking at the bird said, "Him lay egg way up in snow on mountain". I ridiculed the idea then, of this bird laying its egg in the snow far from the sea on the mountain-side, but, keeping a constant lookout, expected to find its breeding place on the rocky islands of Alaska or Siberia, perhaps in company with the auks and murres. Now, however, I found the Eskimo's words corroborated, and the Murrelet's solitary egg laid in just such a strange place as he described. I enclose a photograph marking the spot where I found it, and this egg also.

Lancaster, Massachusetts, February 9, 1914.

RESIDENT *VERSUS* VISITANT

By WILLIAM LEON DAWSON

WITHIN ITS own precinct any science has a right to define its own terms, or to discourse in a fashion understood only by its votaries. But if a science is to become intelligible outside of its own realm, it must use, so far as it may, the language of common life; it must recognize and defer to values already assigned. Zoological science, it seems to me, recently trespassed in its attempted perversion of the word *visitant*, and has obscured rather than clarified the vision of its own field.

To be sure there was a real difficulty involved. Human society in its earlier evolution recognized only two relations, that of being at home, *residence*, or that of being temporarily away, whether to commune with friends, to transact a piece of business, or to satisfy curiosity, *visiting*. The visitor was always understood to have a home, an abiding place, to which he would be presently returning. But animals,—or, to be specific, let us say birds,—viewed in this aspect are of three sorts: those which remain always in one locality, the land of their birth, *residents*, in the strict sense; those which, having completed the duties of rearing a family, roam about, whether north or south or east or west, or up or down, visiting various places in turn or casually, being here today or gone tomorrow or next week, *visitors* in the accommodated sense in which an animal, not dependent upon friends nor seeking definite goals, may be said to visit. A third class, the class for which we seek definition, both resides and visits, having in fact two homes, or definite habitual ranges, and spending more or less time visiting on the way between them. This class has been called, not inappropriately, *summer resident* or *winter resident*, according to the particular local relation under consideration. Of late, however, there has been a great fad for calling this third class summer or winter "visitants", thus confusing them hopelessly with the second class defined above, from which it is of the utmost importance to distinguish them. So defined the Tufted Puffin and the Western Tanager are "summer visitants" of the islands along the coast of Washington. But so also are the Knot and the Wandering Tattler and the Heermann Gull and the California Brown Pelican. Which of these breeds there? The words which might be eloquent if they were chosen with understanding *and in conformity with common usage* tell you nothing. You require to be told further that the Tufted Puffin breeds there, is, in fact, a summer resident. The Western Tanager also makes its home on these islands, becomes for the time, and in every sense susceptible of definition, a resident in summer. The Knot, while found in summer, is evidently away from home; he is on the way, whether north or south, a visitor, or better, a "migrant in summer". The Heermann Gull,—what shall we say of him? Well, there is difficulty here in either case. He is away from home (his breeding place being in Mexico); hence he is not a "summer resident", if that term connotes a breeding bird. But he is a summer resident if you understand by that that he has two homes, one of which is in the North. The California Brown Pelican, however, is strictly a summer visitor, in that he only occasionally appears, and then briefly, along the coast of Washington.

We shall have some difficulty, confessedly, in naming this third class; but we are not without help or guidance, and that in common current usage.

Being situated here at a watering place, we Santa Barbarans are perhaps in a position to realize clearly what recent zoonomers have evidently overlooked; viz., that this third class has arisen in human society, and that it has received its designation. Hereabouts we have two or three scores of families, each of which owns two homes, one in Santa Barbara, and the other in Chicago or New York or Boston, as the case may be. These spend habitually from three to six of the winter months with us, and we call them *winter residents.* Similarly a few families resident in Pasadena or Bakersfield, or Fresno, or elsewhere in the heated interior, maintain separate establishments on the coast, to which they resort for two or three months in summer, and we call such *summer residents.* Winter visitors we have also, of course, shoals of them, spending a week or two at the Potter, or a month with friends in Montecito,—here today and gone tomorrow; Santa Barbara this year and Ceylon the next.

It is a travesty on current usage to call the Gambel Sparrow, which spends five or six months with us, a "winter visitant", and to place him thereby in the same category with the Pacific Fulmar and Baird Cormorant and Glaucous Gull, which are occasionally seen in winter; or with the Blue-fronted Jay, which pays us strict visits. And it is grossly inappropriate to call any breeding bird a "visitant" in its breeding home. Imperfect our human terms may be, but let us minimize their imperfection rather than parade our griefs and invite the scorn of those who speak a living language. The terms "summer resident" and "winter resident" are, in my opinion, much more accurate than the proposed substitutes, and they assuredly do conform to current usage.

Santa Barbara, California, January 8, 1914.

A CHANGE IN FAUNA

By FAYRE KENAGY

THE CHANGES in faunas so rapidly developing in certain regions in the west, have a peculiar interest for me. They take place with especial rapidity on irrigation projects, as the result of altered conditions, and desert surroundings are often completely changed in two or three years. The locality I have been especially interested in is the Minidoka project, in southern Idaho, containing about eighty thousand acres and bisected by the Snake River. This last feature makes it doubly interesting, as affording contrast between the changes in the uplands and those along the stream. As there is so great a difference between the two I will mention each separately.

I came to this region in 1907, before the water was turned into the canals, and have resided here permanently since. Thus I have had an excellent opportunity to note the changes which have taken place. The country was originally sandy, and heavily covered with sage-brush. There were fewer than fifteen summer residents, the river belt excluded, nearly all of them typical of a dry region. Sage Grouse, Sage Thrasher, Burrowing Owl, Rough-legged Hawk, Prairie Falcon, Dusky Horned Lark, and Sage Sparrow were by far the most common. As the farmers cleared their land, the Grouse, Sage Thrasher, and Sage Sparrow were deprived of their natural haunts. The Grouse became rare; the Sparrow and Thrasher are now found on the edges of the project, and on state land that has remained uncleared. But this is not the case

with all the original inhabitants. The hawks, being wandering in their habits, are still found here, and are even more abundant than formerly.

The Brewer Sparrow, originally nesting in dense-leaved sage-brush, is now more common than formerly, and builds its nests in fence corners or weed patches. Last summer I observed something interesting about this bird. When it built in sage-brush, the eggs were dark blue, almost as dark as a Catbird's, but were normal in size and markings. The last nest I found was in an alfalfa field in a slight depression. The nest was constructed the same as previously, but the eggs were normal in color as well as in size and markings. I am very much interested to learn if the whole species will make this change, or whether it was merely a variation restricted to the individual bird.

As soon as grain and alfalfa were raised, many new birds became common, such as the Grasshopper Sparrow, Lark Sparrow, White-rumped Shrike, and the Mountain and Merrill Song Sparrows. Field mice, meanwhile, had become a pest, and in 1910 there was a great influx of Short-eared Owls. They remained throughout 1911, but are now only fairly common, since the mice have been very much thinned out.

After two years of irrigation, the loose sandy soil became saturated with what was called "sub-water". Low places became wet meadows or even ponds, the low land filled with growths of willows and weeds, and the ponds with cat-tails. Now was there, indeed, a host of new arrivals. Tule Wrens, coots, ducks, bitterns, black-birds, rails and killdeer are now very abundant, whereas formerly there were none. The water birds, or water-loving birds, are now more plentiful than the others. During migrations there are vast numbers that visit us for a month or more. These migratory birds have always passed over the project, or, if they stopped at all, did so along the river only.

Trees are scarcely large enough for birds to build in yet, but the orchards and hedges are frequented by robins, grosbeaks, orioles, and warblers. I once saw a Red-breasted Nuthatch, and wondered how it could get along in a sage-brush region. The Burrowing Owl, badger, and kangaroo rat were forced to find high ground when the sub-water came up. Horned toads and lizards retreated when the land was tilled. Rabbits are a pest only to the farmers who live near large areas of uncleared land. The Pinyon Jay inhabits the foothill region several miles away, and makes occasional visits. The Sparrow Hawk is becoming common, coming from an old settled area thirty miles away.

The river belt has changed but little. The willows have been the home of robins, warblers, and sparrows; while swallows, kingfishers, and flickers nest in the banks. There are many water birds that breed on the brushy islands in the stream. There are no new waterbirds found there, but many birds such as the Lark Sparrow, Grasshopper Sparrow, and Kingbird, have come from the inland territory.

The Valley Partridge (introduced from California) and Belted Kingfisher have spread over the highlands of the project. The same is true of many kinds of ducks and the Limicolae.

At the dam there are other conditions prevailing. Here a large colony of Cliff Swallows nests under the eaves of the power plant, over the roaring water. In the heaps of rocks excavated from the canals there are several pairs of Rock Wrens, of interest because this is the only place hereabouts where they are found. Of course this is local, as the changes in the whole pro-

TABLE SHOWING CHANGE IN STATUS OF BIRDS ON THE MINIDOKA PROJECT, IDAHO

	1907	1908	1909	1910	1911	1912	1913
Dafila acuta	tolerably common	tolerably common	common	common	common	abundant	abundant
Plegadis guarauna			rare	tolerably common	tolerably common	common	common
Fulica americana			rare	common	abundant	abundant	abundant
Gallinago delicata			rare	rare	common	abundant	abundant
Actitis macularius				tolerably common	abundant	abundant	abundant
Centrocercus urophasianus	tolerably common	rare	rare	rare	rare		
Asio flammeus				abundant	abundant	rare	rare
Speotyto cunicularia hypogaea	tolerably common	tolerably common	tolerably common	rare	rare	rare	rare
Selasphorus platycercus			tolerably common	common	rare	rare	rare
Tyrannus tyrannus					rare	rare	rare
Tyrannus vociferans				rare	tolerably common	tolerably common	tolerably common
Otocoris alpestris merrilli	tolerably common	abundant	abundant	abundant	abundant	common	common
Chondestes grammacus strigatus			rare	tolerably common	abundant	abundant	abundant
Amphispiza nevadensis nevadensis	abundant	abundant	common	tolerably common	rare	rare	
Hirundo erythrogastra					rare	rare	rare
Dendroica auduboni					rare	tolerably common	tolerably common
Piranga ludoviciana			rare	rare	rare	rare	tolerably common
Oreoscoptes montanus	abundant	abundant	common	tolerably common	rare	rare	rare
Planesticus migratorius propinquus			rare	rare	tolerably common	common	common

ject are on a comparatively limited area. It is an oasis in the desert, for desert conditions still exist on all sides.

Since the opening of the region the number of bird species has risen from fifteen to one hundred and thirty. A few of the most interesting changes are tabulated below.

Boulder, Colorado, February 25, 1914.

THE RACES OF *BRANTA CANADENSIS*

Suggested by Swarth's "Study of a Collection of Geese"*

By ALLAN BROOKS

NO GROUP of North American birds so badly needed revision as the geese of the *canadensis* type, and Mr. Swarth has put not only all ornithologists, but also the discriminating sportsman, under a deep debt of gratitude for his excellent and carefully studied paper, which is practically in the nature of a monograph of the group.

American ornithologists have always been rather prone to carefully study all small birds, and let the larger species severely alone. No better instance of this is needed than the case of these geese. Sportsmen were unable to correctly identify the geese they shot by the aid of any of the available works, nor could their ornithological friends help them much, as all the given diagnoses were at fault.

Could anything be more impossible than the breeding range of *Branta c. occidentalis* as given in the latest A. O. U. *Check-List?* This sub-species is there quoted as breeding in northeastern California and on the coast of western Alaska—localities some fifteen hundred miles apart—though it was known that the whole intervening country was occupied by typical *canadensis.*

Many good ornithologists had worked the northern California and Oregon regions, but it was not until the last year or two that it was definitely ascertained that all records of *occidentalis* as a breeding bird were wrong, and that *canadensis* and only *canadensis* was the resident species. The wonder is that any credence could be given to the theory of an isolated breeding colony of *occidentalis.*

Mr. Swarth has been unable to find any reliable evidence of this subspecies in California, even as a migrant.

In his treatise he first of all proves the fallibility of all the distinctions as based on pattern and color, and indicates that the most reliable distinctions between *canadensis, hutchinsi,* and *minima* lie in the measurements of the culmen and in the comparative lengths of tarsus and middle toe. The very adequate and ingenious system of symbolical measurement charts given by Mr. Swarth are a distinct feature of his work. From these it would seem that most reliance can be placed on measurements of the culmen to separate the three subspecies, i. e., *canadensis, hutchinsi,* and *minima.* In his table the two former do not coalesce at all in this respect, and the slight overlapping of the last two might

*A Study of a Collection of Geese of the *Branta canadensis* Group from the San Joaquin Valley, California. By Harry S. Swarth. Univ. Calif. Publ. Zool., vol. 12, 1913, pp. 1-24, 2 pls., 8 text figs.

be accounted for by the fact that no distinction was made in the comparison of old and juvenile birds.

It is difficult to tell the young from adults when the birds are in skin form, but in the flesh the difference is usually fairly apparent. In the adults of all geese the feathering of the neck is fuller, the knob on the carpus is more prominent, and the whole plumage has a distinct gloss seldom seen in the young bird. Could the tests of the measurement of culmen, and the comparative measurements of tarsus and middle toe, be applied to a series of geese where only young could be compared with young, and adults with adults, it is the writer's belief, based on the handling of many geese in the flesh, that there would prove to be three distinct species—not subspecies—*canadensis, hutchinsi.* and *minima,* with *occidentalis* as a subspecies of *canadensis.*

If the four birds accepted as subspecies occupied distinct breeding ranges, impinging only on their boundaries, the theory of their specific identity might be a sound one, but in the case of *canadensis, hutchinsi,* and *minima* their breeding ranges overlap to such an extent that they cannot be treated as climatic subspecies. In the field *minima* seems to be a very distinct species; in flight the neck looks shorter and the wings longer in proportion than in any other goose, not even excepting the Brant. It also has an unique and peculiar cackling or chuckling cry, only rarely heard, in addition to the ordinary high pitched "honk". Was this known to Mr. Ridgway when he gave it its common name?

It is unfortunate that Mr. Swarth had to work on material, the bulk of which is from California. He has evidently not seen the breeding *canadensis* from the coast strip south of the breeding range of *occidentalis.*

This is largely a non-migratory bird, nearly as dark as *occidentalis,* the under parts being dark gray-brown, but the measurements fully up to the maximum of *B. canadensis canadensis.*

This bird the present writer long took to be *occidentalis* until specimens were carefully measured. The next problem was to identify *occidentalis* among the numbers of *hutchinsi* that he had a chance to examine. The conclusion he was forced to was that as far as southern British Columbia was concerned *occidentalis* was a myth, even though so eminent an authority as Mr. Brewster identified skins sent to him as of that subspecies. The whole problem is a very difficult one and much work remains to be done on the group, but Mr. Swarth's treatise should serve as a basis, a sort of causeway over a hitherto impassable morass.

Okanagan Landing, British Columbia, January 25, 1914.

THE BIRDS OF TETON AND NORTHERN LEWIS AND CLARK COUNTIES, MONTANA

By ARETAS A. SAUNDERS

WITH TEN PHOTOS BY THE AUTHOR

TETON COUNTY lies in the northern half of Montana and considerably west of the center of the state, its northern border formed by the Canadian boundary, and its western by the continental divide. Although in the western half of Montana, its bird-life is more nearly like that of the east-

ern part of the state, due to the fact that along the northern border the eastern prairie region extends farther westward than elsewhere, and in fact reaches the eastern base of the mountains forming the continental divide. I have included with Teton County that portion of Lewis and Clark County that lies in the drainage of the Sun River (see fig. 39). The southern boundary of Teton County is formed by the North Fork of the Sun River, but since my observations covered both sides of the river, and the character of the country is essentially the same on both sides, I have made the divide between the drainages of the Sun and Dearborn rivers the southern boundary of the region studied. This divide forms a natural division between different regions of the state, the character of the country being markedly different on the two sides of it.

In studying the distribution and occurrence of the birds of this region, it may be considered in two main parts, the prairies and the mountains. The

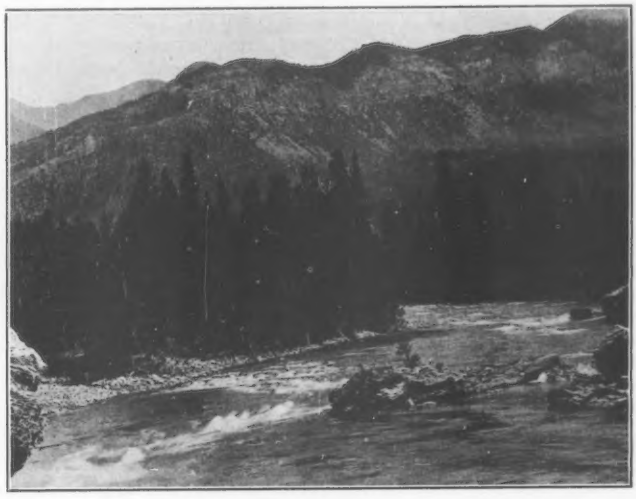

Fig. 39. VIEW IN THE CANADIAN ZONE ON THE SUN RIVER, LEWIS AND CLARK COUNTY, MONTANA.

prairies occupy the eastern portion, and cover considerably more than half of the total area. They lie entirely within the Transition zone, and their altitude varies from 3500 to 4500 feet. They consist of open grass land, rolling hills and flat-topped benches, steep-sided buttes, and broad valleys, watered by streams that are bordered by cottonwood groves and willow thickets. Alkaline ponds and lakes are quite frequent, in fact very numerous toward the westward, along the edge of the lower mountain slopes.

The mountains occupy a comparatively narrow strip through the western part of the counties. They embrace the headwaters of the Sun, Teton and Two Medicine rivers, and Birch Creek (see fig. 40). They lie in the Transition, Canadian, Hudsonian and Alpine zones, and range from 4,000 to 9,500 feet in altitude. These mountains are extremely rough, consisting of numerous limestone ridges with precipitous sides. In many places most of the timber has

been destroyed by repeated fires, but in other parts, particularly about the headwaters of the Sun River, there are extensive forests of evergreen trees.

In the Transition zone the principal trees are the Limber Pine (*Pinus flexilis*) and the Douglas Fir (*Pseudotsuga taxifolia*). The first forms rather extensive but open forests of crooked and stunted trees along the eastern border of the mountains. The latter occurs on north slopes and along streams, and extends up into the Canadian zone. The most extensive mountain forests lie in the Canadian zone. The principal trees in these forests are the Douglas Fir, Lodgepole Pine (*Pinus murrayana*) and Engelmann Spruce (*Picea engelmanni*). In the Hudsonian zone most of these species occur as stunted trees, and with them are also the White-bark Pine (*Pinus albicaulis*), Alpine Fir (*Abies lasiocarpa*), and Mountain Larch (*Larix lyalli*).

The observations in this list were made by myself during a period from June 21, 1911, to March 3, 1913, during which time I was assigned to work on the Lewis and Clark National Forest. Most of the observations in the prairie region were made in the vicinity of Choteau, a small but growing prairie town, the county seat of Teton County. The altitude there is about 3800 feet. Southeast of Choteau are two conspicuous buttes, known as Rattlesnake and Priest buttes, which rise to a height of 4500 feet. At the foot of Priest Butte lies a group of three alkaline lakes, known as the Priest Butte Lakes (see fig. 41). One of these is of considerable size, and all of them attract numerous water birds, particularly during the migrations.

Another point of interest within this region is the Willow Creek Bird Reservation, an area set aside by the government, originally in the interests of the Reclamation Service, but now also as a bird reservation. This area, which is in the prairie region, lies near the town of Augusta. I have not had opportunity to visit it during the breeding season, but have seen numerous water birds there during migrations. It contains one large lake which is frequented by many species of ducks, Snow Geese, and Whistling Swans. The birds recognize the protection afforded by this area, and flock there in preference to nearby areas that are otherwise similar. This area will be of great value in preserving such breeding species of this region as the Curlew, Avocet and various species of ducks, all of which are becoming less abundant as the settlement of the region advances.

My observations in Teton County were largely confined to the southern portion. It is quite probable that the county will be divided in the near future and the northern portion given some other name. In that case the observations in this list, except those from the vicinity of Lubec and the Two Medicine River, will still apply to Teton County. The county at present includes that portion of the Glacier National Park which lies east of the continental divide. Some previous ornithological work has been done there by Mr. George Bird Grinnell, and the results published in early numbers of *Forest* and *Stream*. I have been unable, however, to obtain access to these publications, so am not aware of just what they contain. I believe that work has also been done in this region by the Biological Survey, but most of the records are unpublished. In previous publications on birds in this region, I have spelled the name of the county seat of Teton County as Chouteau, rather than Choteau. Both spellings have been used commonly, and the first adopted by the post-office authorities. Since my publication, however, the town has been incorporated, and Choteau has been officially adopted. Unless otherwise stated, migration dates in this list were obtained at Choteau, or in the immediate vicinity.

LIST OF SPECIES

Colymbus holboelli. Holboell Grebe. Migrant. Observed at Lubec, September 25-27, 1911. A carcass found at Priest Butte Lakes in the fall of 1912.

Colymbus nigricollis californicus. *Eared Grebe. Summer resident. Breeds commonly in sloughs that are overgrown with rushes. No nests found, but the birds were seen frequently with broods of young. Migration dates: September 4, 1911, and May 1, 1912.*

Podilymbus podiceps. Pied-billed Grebe. Seen rarely in summer. Probably breeds with the above species.

Gavia immer. Loon. Rare migrant. Observed once on Priest Butte Lake, May 26, 1912.

Larus delawarensis. Ring-billed Gull. Migrant and summer resident. Adult birds are seen commonly all summer about the alkaline lakes and ponds, but I doubt if they breed, as I have never seen young birds until late in the fall

Fig. 40. HUDSONIAN AND ALPINE ZONES, IN MOUNTAINS AT HEAD OF BIRCH CREEK, TETON COUNTY, MONTANA.

migration. Probably Herring Gulls and perhaps other species occur in migrations with this species, but no others have been positively identified. Migration dates: April 16, 1912, and November 19, 1912.

Larus philadelphia. Bonaparte Gull. A flock of these gulls was observed on an alkaline lake about ten miles from Choteau, October 31, 1912.

Mergus americanus. Merganser. Observed on the Teton River near Choteau on April 16 and 17, 1912. A pair of birds seen each day.

Mergus serrator. Red-breasted Merganser. Quite common along the Sun River inside the mountains, in August and September. A small flock observed near Choteau, May 23, 1912.

Anas platyrhynchos. Mallard. The most abundant duck in this region. Nests commonly all through the prairies, and is very abundant in migrations. Flocks also winter commonly on sloughs where there are warm springs that

keep the water open. The spring migration begins early in March, and the fall migration lasts until December 1, or even later. Nesting begins in late April and the first downy young may be seen early in June. (See fig. 42.)

Chaulelasmus streperus. Gadwall. Summer resident. Not very common, but occurs and nests regularly. Birds are seen with broods of young in June and July. Migration date: April 17, 1912.

Mareca americana. Baldpate. Summer resident, breeding commonly about the alkaline ponds. Very abundant in migrations. Probably nests a little later than the Mallard and Gadwall. The birds occur in small flocks in the spring migrations until May, whereas the above species are usually in pairs at this season. Migration dates: April 17, 1912, and November 28, 1912.

Nettion carolinense. Green-winged Teal. Common migrant and rather rare summer resident. Migration date: April 16, 1912. On December 27, 1912, I secured a crippled bird that was wintering on a small spring-hole near Choteau. The wing of this bird had been broken for a long time and had partially healed over, but not in a way to enable it to fly.

Querquedula discors. Blue-winged Teal. Quite common summer resident, particularly about the edges of ponds that are overgrown with rushes. Young seen near Choteau July 7, 1912.

Spatula clypeata. Shoveller. Common summer resident. Very abundant in migrations. Occurs in large flocks on the alkaline ponds in fall. Migation dates: March 24, 1912, and November 9, 1912.

Dafila acuta. Pintail. Summer resident and migrant. Breeds in similar places to the Mallard, but much less commonly. I examined a drake of this species that was shot by a hunter near Choteau, December 27, 1912.

Marila americana. Redhead. Observed twice in migrations: September 13, 1911, and April 17, 1912.

Marila valisineria. Canvasback. Common migrant on the alkali lakes, remaining in fall until these lakes freeze over. Migration dates: April 17, 1912, and November 24, 1912.

Marila affinis. Lesser Scaup Duck. Common summer resident. Breeds in the vicinity of the alkaline ponds. Migration date: May 1, 1912.

Clangula clangula americana. Golden-eye. Common migrant and winter resident. Abundant on the alkaline lakes in migrations, and along the rivers all winter. Seen in spring up to May 3, 1912, and not seen in fall until November 24, 1912.

Charitonetta albeola. Bufflehead. Common migrant on the alkaline ponds. Seen in spring from April 17 to May 14, 1912, and in fall from November 9 to 24, 1912.

Histrionicus histrionicus. Harlequin Duck. Rare summer resident in the mountains. I observed several birds on Birch Creek from May 30 to June 3, 1912, and believe the birds were breeding there but could not find a nest. They frequented the rapids and swiftest parts of the streams, evidently living largely on fish.

Chen hyperboreus hyperboreus. Snow Goose. Abundant migrant on the alkaline ponds and lakes. Occurs in large flocks, often numbering thousands. Flocks frequently light in the fields, apparently exhausted from long flight, and are then often killed with sticks before they can rise and fly. The people commonly call them "brant". Migration dates: April 9 to 23, 1912, October 24 to 31, 1911, and November 9 to 24, 1912.

Chen rossi. Ross Goose. One observed on the Teton River, near Choteau, May 8, 1912. This bird seemed exhausted, and I was able to approach it and examine it closely before it flew.

Branta canadensis canadensis. Canada Goose. Common migrant in March and November, but not in such large numbers as the Snow Geese. Formerly bred commonly along the rivers, and is reported to still breed in small numbers along the Marias River. Migration dates: November 24 to 28, 1912.

Olor columbianus. Whistling Swan. Common migrant on the larger alkaline lakes. I examined the remains of a dead bird found on the shores of Priest Butte Lake, and from the position of the nostril identified it as this species. Migration dates are October 31, 1911, April 23, 1912, and November 9 to 28, 1912.

Botaurus lentiginosus. Bittern. Summer resident in sloughs where rushes grow thickly, throughout the prairie portion of the region. Migration date: May 13, 1912.

Ardea herodias herodias. Great Blue Heron. Summer resident on the

Fig. 41. Priest Butte, Teton County, Montana.

larger rivers. Common on the lower Sun River, but I have not seen it on the other rivers of this region.

Grus mexicana. Sandhill Crane. A pair observed near Choteau, April 28, 1912.

Porzana carolina. Sora. Summer resident in sloughs and marshes of the prairies. A nest found near Choteau, June 13, 1912 (see Condor, xv, 1913, p. 128). Migration date: May 14, 1912.

Fulica americana. Coot. Common summer resident and migrant. Nests are common in thick rushes about the borders of ponds and sloughs. In migration the birds occur in large flocks on the alkaline ponds and lakes. Migration dates: September 28, 1911, May 26, 1912, and November 9, 1912.

Lobipes lobatus. Northern Phalarope. Flocks observed in fall migration at Priest Butte Lakes, August 13 to September 4, 1911.

Steganopus tricolor. Wilson Phalarope. Common summer resident in marshy places on the edges of alkaline ponds. Downy young observed in

June. Migration date: May 23, 1912. Probably returns south very early, as I have no records later than July 3, 1911, and July 7, 1912.

Recurvirostra americana. Avocet. Common summer resident of the prairies, nesting on the shores of alkaline ponds, and on islands in the larger ones (see fig. 43). Begins nesting late in May, and downy young are seen by the middle of June. Migration date: May 23, 1912. Most of the birds evidently leave in August, but I have record of one September 1, 1911.

Gallinago delicata. Wilson Snipe. Found in small numbers all the year around. Nests regularly, but not commonly, in wet marshy meadows, and occurs all winter around warm springs where the water remains open.

Pisobia maculata. Pectoral Sandpiper. A small flock seen and one bird secured at Priest Butte Lakes, September 4, 1911.

Pisobia bairdi. Baird Sandpiper. Migrant on the shores of alkaline ponds. Observed August 13 to September 4, 1911.

Pisobia minutilla. Least Sandpiper. Found with the above species on August 13, 1911.

Limosa fedoa. Marbled Godwit. A single individual seen at Priest Butte Lakes, May 26, 1912.

Totanus melanoleucus. Greater Yellowlegs. Migrant. Observed at Priest Butte Lakes September 4, 1911.

Totanus flavipes. Yellowlegs. Common migrant. Dates are August 13 to September 4, 1911, and May 8 to 23, 1912.

Helodromas solitarius cinnamomeus. Western Solitary Sandpiper. Fall migrant. Observed about prairie ponds August 5 to 18, 1911, and on the upper Sun River in the mountains, August 13, 1912.

Bartramia longicauda. Upland Plover. Observed once near Choteau, June 27, 1911.

Actitis macularius. Spotted Sandpiper. Common summer resident along the borders of streams, both on the prairies and in the mountains up to about 5500 feet altitude. Migration dates: May 17, 1912, and August 28, 1911. I found several nests near Choteau in June, 1912; in one of these the eggs hatched on June 22. (See fig. 44.)

Numenius americanus. Long-billed Curlew. Summer resident. Still common in many places on the prairies, but becoming rare in the more thickly settled parts. Begins nesting in May. In late July the young and old birds gather in large flocks about the alkaline ponds, and most of them leave soon after this. Migration dates: September 4, 1911, and April 20, 1912.

Squatarola squatarola. Black-bellied Plover. Several birds of this species observed at Priest Butte Lakes, September 4, 1911.

Oxyechus vociferus. Killdeer. Abundant summer resident. Nests commonly throughout the prairies. Migration dates: March 26, 1912, and October 12, 1912. In fall migration the Killdeer evidently passes over in considerable numbers at night. The call of this bird may be heard late at night, coming from overhead, through September and in early October.

Dendragapus obscurus richardsoni. Richardson Grouse. Abundant resident throughout the mountains. Breeds on the grass slopes of the upper Transition and lower Canadian zones. Broods of young are very common in such places all summer, feeding very largely on grasshoppers. About the middle of September, when the first snowstorms come, the grouse move up the mountains; here they winter along the ridges of the upper Canadian and Hudsonian

zones, feeding on bear-berries and juniper, or on pine and fir needles when the berries are covered with snow. They return to the lower slopes again when the breeding season commences, about the middle of May.

Canachites franklini. Franklin Grouse. Permanent resident in the mountains, occurring in the thick, dense, spruce forests along the mountain streams, and in the bottoms of gulches. Said to be less common now than formerly.

Bonasa umbellus umbelloides. Gray Ruffed Grouse. Permanent resident in the mountains, between altitudes of 4500 and 6000 feet. Inhabits the willow and cottonwood thickets of the lower mountain streams. All the birds I have observed closely in this region are *B. u. umbelloides,* while those of more southern Montana are *B. u. togata.*

Lagopus leucurus leucurus. White-tailed Ptarmigan. Permanent resident in the Alpine zone along the higher ridges. Only found on the more remote ridges, along, or near, the continental divide.

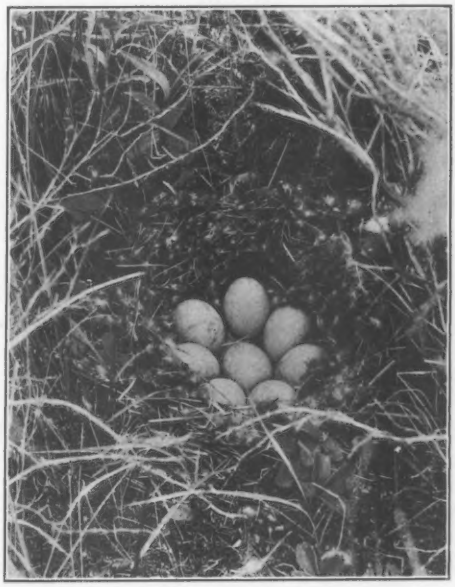

Fig. 42. NEST AND EGGS OF THE MALLARD.

Pedioecetes phasianellus campestris. Prairie Sharp-tailed Grouse. Permanent resident of the prairies. The birds begin nesting in late May, when the cooing sound which accompanies the "chicken dance" may be heard any evening. The first young are usually seen early in July. In winter the birds gather in large flocks in the thickets, feeding largely on buffalo-berries and wild rose hips. In spring and fall they frequent alfalfa fields, and eat the alfalfa leaves.

Zenaidura macroura marginella. Western Mourning Dove. Summer resident. Much less common than in southern Montana. I found nests with eggs in July. Migration date: May 19, 1912.

Circus hudsonius. Marsh Hawk. Common summer resident. The most abundant hawk in the prairie portion of the region. An account of the nesting of this bird in this region has been published (see CONDOR, XV, 1913, pp. 195-204). Migration date: April 7, 1912.

Accipiter velox. Sharp-shinned Hawk. Summer resident in the mountains. Nests commonly in aspen groves and spruce thickets. Young are usually not out of the nest till late August. Migration dates: May 8, 1912, September 8, 1911, and September 13, 1912.

Accipiter cooperi. Cooper Hawk. Summer resident. Usually seen only in the mountains, but I observed one in a cottonwood grove near Choteau, July 8 and 9, 1912.

Astur atricapillus atricapillus. Goshawk. I observed a pair of these birds June 29, 1911, in a heavy stand of spruce timber on Beaver Creek, in the Sun River country. I believe they had a nest in the vicinity. I saw another bird on the West Fork of the Sun River September 3, 1912.

Buteo borealis calurus. Western Redtail. Common summer resident. The commonest hawk in the mountains, but occurs rarely on the prairies. Nests occasionally in large firs, but much more frequently on rocky ledges on the faces of steep cliffs.

Buteo swainsoni. Swainson Hawk. Common summer resident of the prairies, nesting in cottonwood groves. Also found along the base of the mountains, where it nests in the limber pines. I found one nest placed in a willow bush but six feet from the ground. Nesting begins late in May. Migration dates: May 1, 1912, and September 27, 1911.

Archibuteo lagopus sancti-johannis. Rough-legged Hawk. I observed this hawk but once: January 8, 1912.

Archibuteo ferrugineus. Ferruginous Rough-leg. Summer resident; not common. A pair nest each year on the precipitous face of Priest Butte. Nesting begins early in May, and I was informed that this nest contained eggs and newly-hatched young on June 2, 1912.

Aquila chrysaetos. Golden Eagle. Permanent resident. Most common along the bases of the mountains.

Haliaeetus leucocephalus alascanus. Northern Bald Eagle. Rare. I have seen it only in March and November, when there seems to be a migration of this species along the foothills of the mountains. I have listed it as the subspecies *alascanus* on the strength of a mounted specimen in the Forest Service office at Choteau. This is a bird in juvenal plumage. It measures: wing, 27.5 inches, tail, 16.0 inches, and tarsus, 4.4 inches, measurements certainly large enough to class it with the northern subspecies. This bird came from a little outside this region, having been secured by Mr. W. H. Daugs of the Forest Service on the South Fork of the Flathead River, west of the continental divide.

Falco rusticolus rusticolus. Gray Gyrfalcon. I observed a bird of this species very closely at Collins, January 8, 1912.

Falco mexicanus. Prairie Falcon. Summer resident in the prairie region. A pair nested on the side of Rattlesnake Butte in 1912.

Falco peregrinus anatum. Duck Hawk. Rare summer resident. I saw a pair near the cliffs on Priest Butte several times in the summer of 1911, and believe that they nested there. They were not present in 1912, however.

Falco sparverius phalaena. Desert Sparrow Hawk. Summer resident in the prairie region. I found a nest in an old flicker hole in a cottonwood near Choteau, in 1912. The young from this nest were on the wing July 14. This hawk is less common here than in southern Montana. Migration dates: May 19, 1912, and September 28, 1911.

Pandion haliaetus carolinensis. Osprey. Observed once, along the Teton River, near Choteau, May 19, 1912.

Asio flammeus. Short-eared Owl. Common summer resident of the prairies. I believe that at least four pairs nested within a radius of two miles of Choteau in 1912 (see CONDOR, XV, 1913, pp. 121-125).

Bubo virginianus pallescens. Western Horned Owl. Permanent resident

in the prairies, nesting in cottonwood groves. I observed young near Choteau, well able to fly, in late May, 1912.

Nyctea nyctea. Snowy Owl. Occasional winter visitor on the prairies.

Surnia ulula caparoch. Hawk Owl. One seen near Summit, in fire-killed pine timber, November 8, 1912.

Glaucidium gnoma pinicola. Rocky Mountain Pygmy Owl. Permanent resident. Observed frequently in different parts of the mountains, but most commonly in fir timber on Beaver Creek, a tributary of the Sun River.

Ceryle alcyon alcyon. Belted Kingfisher. Common summer resident along streams, both in the prairies and mountains. Migration dates: April 9, 1912, and September 27, 1912.

Dryobates villosus monticola. Rocky Mountain Hairy Woodpecker. Permanent resident. Found in winter and migrations in cottonwood groves along streams in the prairies. Breeds in pine and fir forests in the mountains. It is possible that the bird of this region is referable to *leucomelas*. I secured no specimens, but found a dead bird near Choteau, late in March, 1912, from which I saved a wing. From the markings on this wing, I believe that this bird was intermediate between *monticola* and *leucomelas*.

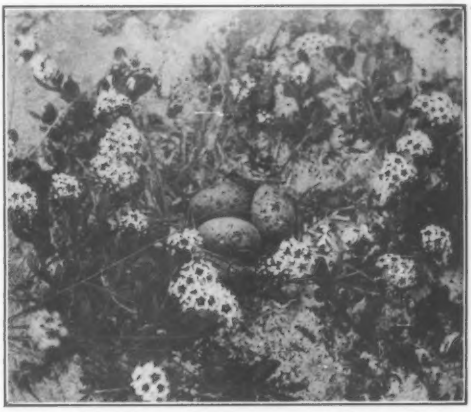

Fig. 43. NEST AND EGGS OF AVOCET.

Dryobates pubescens (subspecies?). Downy Woodpecker. One bird seen near Choteau, January 5, 1913. Since this bird occurred in winter, and this species is certainly not common in this region in the breeding season, I believe that it may belong to *D. p. nelsoni*. In this connection I wish to call attention to a note of Bendire's (Life Hist. N. Amer. Birds, vol. II, p. 56) made before this subspecies was described, but which undoubtedly proves the occurrence of *nelsoni* in Montana in winter.

Picoides arcticus. Arctic Three-toed Woodpecker. Observed in considerable numbers in fire-killed timber, on the South Fork of the Two Medicine River, January 15, 1912.

Picoides americanus dorsalis. Alpine Three-toed Woodpecker. Observed in considerable numbers with the above species at the same time and place. A single bird seen in the same place March 30, 1912, and one observed on Birch Creek June 2, 1912. A large area on the Two Medicine River was burned over in the summer of 1910. The next year the bark of the fire-killed trees was infested by a small beetle. The presence of this beetle evidently accounted for the abundance of three-toed woodpeckers on this area in January. No birds were seen there the following winter.

Melanerpes erythrocephalus. Red-headed Woodpecker. Rare summer resident. One bird seen near Choteau, July 16, 1911, and a pair near Strabane, June 5, 1912.

Asyndesmus lewisi. Lewis Woodpecker. Summer resident. I have seen it only in the southern part of the region, in cottonwood groves along the Sun River, just outside the mountains.

Colaptes cafer collaris. Red-shafted Flicker. Common summer resident. Nests in cottonwood groves in the prairies and in the lower mountain canyons up to 5500 feet. Most of the birds are hybrids, but I have seen none in this region that were typical of the eastern species. Migration date: April 7, 1912. Two birds wintered near Choteau in the winter of 1912-13.

Chordeiles virginianus henryi. Western Nighthawk. Common summer resident both in prairies and in the mountains below 6000 feet. Migration dates: June 7, 1912, August 28, 1911, and August 29, 1912.

Selasphorus rufus. Rufous Hummingbird. Summer resident. Not common, but found most frequently along the foothills of the mountains.

Stellula calliope. Calliope Hummingbird. Summer resident of the mountains. Seen rarely. I secured a male on Birch Creek, June 2, 1912.

Tyrannus tyrannus. Kingbird. Abundant summer resident in the prairies. The Kingbirds in this region depart from their usual habit of nesting high, and place their nests low down in young cottonwoods or buffalo-berry bushes, particularly those along the banks of streams. The nest frequently overhangs the water. In 1912 I found ten nests near Choteau, no one of which was higher than eight feet from the ground, and one of them was less than two feet from the water of the stream it overhung. Migration dates: May 23, 1912, and August 22, 1911. The first nests are built in this region about the middle of June. The eggs take fourteen days to hatch, and the young leave the nest when fourteen or fifteen days old, so that they are first on the wing in the latter half of July.

Tyrannus verticalis. Western Kingbird. Rare summer resident in the prairies. One pair nested near Choteau in 1912. Others seen on the Sun River, near Augusta. Migration dates: May 28, 1912, and August 18, 1911.

Sayornis sayus. Say Phoebe. Summer resident on the prairies. Not common. Nests on buildings or on rocks on the sides of buttes. A nest of this species on a building in Choteau is said to have been occupied for the past seventeen years. When I first arrived in Choteau, June 21, 1911, there were six young in this nest, that left the nest about July 4. The next year the owners returned April 28, sitting commenced on a set of seven eggs on May 23, the eggs all hatched on June 4, and the seven young were successfully reared and left the nest on June 23. A second brood was started and three eggs were laid by July 2.

Nuttallornis borealis. Olive-sided Flycatcher. Summer resident in the mountains, but not common. Rare migrant on the prairies. I secured a bird near Choteau, May 26, 1912.

Myiochanes richardsoni richardsoni. Western Wood Pewee. Abundant summer resident of cottonwood groves on the prairies. Migration dates: June 6, 1912, and August 13, 1911.

Empidonax trailli trailli. Traill Flycatcher. Rare summer resident. Observed on Willow Creek, northern Lewis and Clark County, June 30, 1911. A migrant bird secured near Choteau, May 24, 1912.

Empidonax minimus. Least Flycatcher. Abundant summer resident of cottonwood groves on the prairies. Migration date: May 22, 1912. Nesting

commences about the middle of June, the eggs hatch in about fourteen days, and the young are on the wing in the latter half of July.

Empidonax hammondi. Hammond Flycatcher. Rare summer resident in the mountains. Seen on the West Fork of the Sun River August 12, 1912.

Empidonax wrighti. Wright Flycatcher. Common summer resident in the mountains below 6000 feet. Abundant along the foothills.

Otocoris alpestris arcticola. Pallid Horned Lark. Winter visitor on the prairie benches. Occurs in large flocks with Snow Buntings and Alaska Longspurs. Last seen in spring on March 10, 1912.

Otocoris alpestris leucolaema. Desert Horned Lark. Abundant summer resident on the prairie benches. A few winter with the above species. The returning flocks of this bird are usually the first sign of spring. Migration dates: March 10, 1912, March 3, 1913. Young are first seen on the wing in the latter half of June, and again in August, which leads me to believe that there are two broods, one commencing early in May, and the second in July.

Pica pica hudsonia. Magpie. Abundant permanent resident on the prairies, nesting in cottonwood groves and willow thickets. Occasionally found in the mountains in fall, but does not nest there. Nesting begins in April. In 1912 I found the first eggs April 7, and also took a set of fresh eggs May 26. Young are first seen out of the nest about June 1. In the winter, in this region, magpies frequently make use of their last year's nests as a shelter from the heavy winds.

Fig. 44. NEST AND EGGS OF SPOTTED SANDPIPER.

Cyanocitta stelleri annectens. *Black-headed Jay. Permanent* resident in the mountains. *Not* common.

Perisoreus canadensis capitalis. Rocky Mountain Jay. Permanent resident in the mountains. Somewhat less abundant than in southern Montana.

Corvus corax principalis. Northern Raven. Permanent resident in the mountains. Rare in most places, but fairly frequent in the vicinity of Lubec, along the southern border of the Glacier National Park.

Corvus brachyrhynchos hesperis. Western Crow. Common summer resident, nesting in cottonwood groves and willow thickets, in the prairies. Nesting commences about the middle of May, and young are on the wing in the latter half of June. Migration date: April 2, 1912. Occurs rarely in winter.

Nucifraga columbiana. Clarke Nutcracker. Abundant permanent resident in the mountains.

Dolichonyx oryzivorus. Bobolink. Summer resident in the wet meadows of the prairie region. Abundant locally. Said to be increasing in numbers. Migration date: May 25, 1912.

Molothrus ater ater. Cowbird. Abundant summer resident on the prairies. In 1912, I found the eggs of this species in nests of the Brewer Blackbird, Chipping Sparrow, Vesper Sparrow, Black-headed Grosbeak, Cedar Waxwing and Yellow Warbler. Migration date: May 10, 1912.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. Summer resident of rush-grown sloughs on the prairies. Migration date: May 7, 1912.

Agelaius phoeniceus fortis. Thick-billed Redwing. Summer resident, nesting in cat-tail sloughs on the prairies. Migration date: April 15, 1912. On this date I found both sexes present, though it is usually stated that the females come later than the males. Nesting begins about the middle of May, and the first young may be found on the wing in the latter half of June. (See fig. 45.)

Sturnella neglecta. Western Meadowlark. Abundant summer resident of the prairies. Migration date: April 4, 1912. Nesting begins late in May, and nests with eggs may be found in the first half of June. Young out of the nest are first seen late in June. The young leave the nest when about ten days old. (See fig. 46.)

Icterus bullocki. Bullock Oriole. Rare summer resident. A pair nested in Choteau in 1911, but were not seen in 1912. A few other birds were seen occasionally in the cottonwood groves. Migration date: May 25, 1912.

Euphagus cyanocephalus. Brewer Blackbird. Abundant summer resident on the prairies. Nests most commonly in shrubby cinquefoil and wild rose bushes. Migration dates: May 8, 1912, September 18, 1911. Nesting begins in the later half of May. A colony of these birds nests in the cinquefoil bushes near Choteau. I found nine nests there in 1912. The eggs hatch in twelve days, and the young leave the nest when ten days old. Most of them are on the wing in the latter half of June. The birds do not raise a second brood to my knowledge, but live in flocks with their young for the remainder of the summer.

Quiscalus quiscula aeneus. Bronzed Grackle. I secured a pair of these birds near Choteau, May 25, 1912. They were the only ones I observed in the region, which must be about the western limit of their range in Montana. Grackles are not uncommon, however, a little farther south and east, at Great Falls.

Pinicola enucleator montana. Rocky Mountain Pine Grosbeak. A rare summer resident of the high mountains in the Hudsonian zone. I have observed it only a few times.

Carpodacus cassini. Cassin Purple Finch. Summer resident in the mountains in the Canadian and Hudsonian zones. Not common.

Loxia curvirostra minor. Crossbill. A flock observed near Lubec, January 15, 1912.

Leucosticte tephrocotis tephrocotis. Gray-crowned Rosy Finch. Migrant in the mountains, and occasional winter resident on the prairies. Not common, but in large flocks when seen. Migration date: October 22, 1911.

Leucosticte tephrocotis littoralis. Hepburn Rosy Finch. Occurs with the above, but in smaller numbers.

Acanthis linaria linaria. Redpoll. Common winter visitor on the prairies. Migration dates: October 22, 1911, and April 23, 1912.

Astragalinus tristis pallidus. Western Goldfinch. Common summer resident of the prairie region, nesting in cottonwood groves. Migration date: May 23, 1912. Evidently does not nest until July.

Spinus pinus. Pine Siskin. Abundant summer resident in the mountains, nesting in lodgepole pine and Douglas fir forests, in the Canadian zone. Also found to a lesser extent in the Transition zone, nesting in cottonwoods along the foothills of the mountains.

Plectrophenax nivalis nivalis. Snow Bunting. Winter visitor on the prairies. Occurs in large flocks with the Pallid Horned Lark and Alaska Longspur.

Calcarius lapponicus alascensis. Alaska Longspur. Migrant and winter visitor, occuring on the prairies with the above species and the Pallid Horned Lark. Migration date: October 31, 1912.

Calcarius ornatus. Chestnut-collared Longspur. Summer resident on the prairies. Rather local in distribution, as I have observed it only in the neighborhood of Priest Butte, where it was first noted May 8, 1912. In this same locality I found a young bird just out of the nest, and a nest containing eggs, on June 23, 1912.

Fig. 45. Nest and eggs of Thick-billed Redwing.

Rhynchophanes mccownii. McCown Longspur. Abundant summer resident on the prairies. In some places on the flat-topped prairie benches, this is the only bird to be found. Migration dates: October 16, 1911, and April 17, 1912. I believe that there are either two broods, or else the birds nest irregularly from the time of their arrival until late July. The evidence collected is as follows: The earliest nest I have record of was found May 22, 1912, when it contained two half-grown young, that left the nest on May 27. A second nest contained three fresh eggs on May 26, 1912. In 1911 I found a nest containing eggs on June 25. These eggs had not hatched on July 4, when I found another nest with eggs. On July 3, 1911, and again on July 17, I observed young birds out of the nest and barely able to fly. (See fig. 47.)

Pooecetes gramineus confinis. Western Vesper Sparrow. Abundant summer resident in the prairie region, and in mountain meadows up to 6000 feet. Nesting begins early in June, and the first young are on the wing early in July. Migration dates: September 18, 1911, and April 29, 1912.

Passerculus sandwichensis alaudinus. Western Savannah Sparrow. Abundant summer resident of the prairie region, nesting in rather wet meadows. Migration date: April 30, 1912.

Ammodramus bairdi. Baird Sparrow. Observed in migrations September 4, 1911, and May 23, 1912. Possibly a summer resident. A sparrow nested in the grass about the borders of alkaline ponds which I was unable to identify. I heard the song, which was unfamiliar to me, frequently. I am not acquainted with the song of the Baird Sparrow, but believe it likely that it was this species.

Chondestes grammacus strigatus. Western Lark Sparrow. Seen once near Choteau, July 18, 1911.

Zonotrichia leucophrys leucophrys. White-crowned Sparrow.

Zonotrichia leucophrys gambeli. Gambel Sparrow. Apparently both of these birds are summer residents in the mountains, and migrants in the prairies. I observed Z. *l. leucophrys* very closely on the Teton River in the summer of 1911. These birds were about one of the Ranger Stations, and came to pick up oats in a corral where horses were fed. They became so tame, that they would almost eat out of my hand. In June, 1912, I secured specimens of Z. *l. gambeli* on Birch Creek. Two varieties of songs from this species are to be heard in this region, and I believe that they belong to the two different subspecies. The song which evidently belongs to *gambeli* is like that of *leucophrys,* but shorter, with three or four of the terminal notes omitted. I have never heard any but the longer song in southern Montana, where I believe only *leucophrys* breeds. Migration dates of birds seen in the prairies, without attempt to separate the two forms are: October 1, 1911, and May 8 to 28, 1912.

Spizella monticola ochracea. Western Tree Sparrow. Common winter visitor on the prairies. Migration dates: October 1, 1911, and April 3, 1912.

Spizella passerina arizonae. Western Chipping Sparrow. Common summer resident of evergreen forests in the mountains. Rarely a summer resident of cottonwood groves in the prairies. Common in both places in migration. Migration date: May 18, 1912. Nesting begins early in June, and young are on the wing in July.

Spizella pallida. Clay-colored Sparrow. Abundant summer resident of the prairies, nesting in patches of cinquefoil and buffalo-berry bushes. Migration date: May 12, 1912.

Spizella breweri. Brewer Sparrow. Rare summer resident. I observed a pair of these birds in a patch of buffalo-berry bushes along the Teton River near Choteau, several times in June and July, 1912.

Junco hyemalis hyemalis. Slate-colored Junco. Rare migrant on the praries. Observed November 7, 1912, near Choteau.

Junco hyemalis montanus. Montana Junco. Common summer resident in the mountains. Rather rare migrant on the prairies. Migration date: April 2, 1912. In this region the great variety of juncos, so common in southern Montana during migrations, is lacking. Probably most of the other forms breed farther to the westward, and move that way as they go north, thus entirely avoiding this region.

Melospiza melodia montana. Mountain Song Sparrow. Rare summer resident, in the mountains, in willow thickets along streams. Seen most frequently in the southern part of the region, which is probably about the northern limit of its breeding range. A migrant song sparrow was observed near Choteau, May 8, 1912. My attempt to secure this bird failed, but I believe it probable that it belonged to another race, perhaps *M. m. juddi.*

Melospiza lincolni lincolni. Lincoln Sparrow. Common summer resident

in the mountains, nesting in willow thickets along streams in the Canadian zone. Migration date: May 30, 1912, on Dupayer Creek.

Passerella iliaca iliaca. Fox Sparrow. I observed a bird that was evidently of this subspecies in Hannan Gulch on the Sun River, October 18, 1911. The bird was in a dense aspen thicket and approached to within three or four feet of me.

Passerella iliaca schistacea. Slate-colored Fox Sparrow. Rare summer resident in the mountains, nesting in dense willow thickets along streams. This is evidently close to the northern limit of the breeding range on this side of the continental divide. I observed the species most frequently on the Sun River and on Willow Creek, in northern Lewis and Clark County.

Pipilo maculatus arcticus. Arctic Towhee. Common summer resident of

Fig. 46. NEST AND EGGS OF WESTERN MEADOWLARK.

willow thickets on the prairies. Migration date: May 12, 1912.

Zamelodia melanocephala. Black-headed Grosbeak. Common summer resident of willow thickets on the prairies. Begins nesting the middle of June. Young are on the wing the latter half of July. Migration date: June 7, 1912. (See fig. 48.)

Passerina amoena. Lazuli Bunting. Summer resident. Not common, but most frequent along the foothills of the mountains in the southern part of the region.

Calamospiza melanocorys. Lark Bunting. Summer resident on the prairies. Rare during my stay, but information indicates that here as well as elsewhere in Montana, these birds were very abundant in the year 1907.

Piranga ludoviciana. Western Tanager. Common summer resident in the mountains. Nests in fir forests. Migration dates: August 28, 1911, on the Sun River, and June 4, 1912, on Birch Creek.

Petrochelidon lunifrons lunifrons. Cliff Swallow. Abundant summer resident of the prairies. Nests commonly both on buildings and on the steep sides of buttes. People in Choteau destroy their nests as fast as they are built, believing that the birds carry bed-bugs. My observations seem to show that the birds will not nest on wooden buildings that are kept painted, prefering either stone buildings or unpainted wooden ones. Migration date: June 7, 1912.

Hirundo erythrogastra. Barn Swallow. Summer resident on the prairies. Occurs regularly in small numbers but is not common. Migration date: June 7, 1912.

Tachycineta thalassina lepida. Northern Violet-green Swallow. Summer resident in the mountain canyons. Most common in the southern part of the region and rare northward. These birds are known as "Rock Swallows" in this region.

Riparia riparia. Bank Swallow. Common summer resident in the prairie region. Colonies are very common along the steep clay banks of the rivers. Migration date: May 26, 1912.

Stelgidopteryx serripennis. Rough-winged Swallow. Common summer resident. Nests in clay banks along the rivers, usually as single, scattered pairs, but I have seen several pairs nesting in a colony with the above species. Migration date: May 22, 1912. This swallow was fairly abundant for several days before the other species arrived.

Bombycilla garrula. Bohemian Waxwing. Common winter visitor both on the prairies and in the mountains, being most abundant along the foothills of the mountains. Occurs in the mountains rarely in summer and probably breeds (see CONDOR, XIV, 1912, p. 224). Migration date: March 30, 1912.

Bombycilla cedrorum. Cedar Waxwing. Common summer resident on the prairies and in the lower mountain canyons, below 5000 feet. Migration date: June 23, 1912. Nesting generally begins the middle of July, but I found one nest at Choteau that was half built on June 28, and in which the four eggs were laid July 5 to 8.

Lanius borealis. Northern Shrike. Winter visitant. I found it rare in the winter of 1911-12, and saw none at all in 1912-13. From a few observations in other parts of the state I am inclined to think that these birds were rare all over the state in these two years. Migration date: October 16, 1911.

Lanius ludovicianus excubitorides. White-rumped Shrike. Summer resident of the prairie region. Quite common in the summer of 1911, but seen only once in 1912. This occurrence was at Choteau on April 9, when the bird had evidently just arrived. My migration dates for this species in Montana are quite variable, and lead me to believe that this is due to a wide difference in the migration dates of the two subspecies occurring in the state. *L. l. excubitorides* evidently breeds only in valleys of the Transition zone, below 4500 feet elevation, arriving early in April, as shown by the above date, and by another record, April 9, 1911, at Helena, at an elevation of about 4000 feet. The other subspecies *L. l. migrans,* is evidently a migrant only, occurring in the upper Transition zone, about 5000 feet elevation, in May. The evidence to show this is certain only in the case of a bird taken at Anaconda, May 14,

1911 (CONDOR, XIV, 1912, p. 30), but I now believe that the birds seen by me in Gallatin County in May (AUK, XXVIII, 1911, p. 46), also belong to this subspecies.

Vireosylva olivacea. Red-eyed Vireo. Summer resident in the prairie region, nesting in cottonwood groves. Rare north of the Sun River and not very common there.

Vireosylva gilva swainsoni. Western Warbling Vireo. Common summer resident in aspen groves in the mountains up to about 5500 feet. Most abundant along the foothills. Found all summer in cottonwoods in the prairies, but in small numbers.

Lanivireo solitarius cassini. Cassin Vireo. Observed on the West Fork of the Sun River, at an altitude of about 5500 feet, on September 3, 1912.

Vermivora celata celata. Orange-crowned Warbler. Common summer

FIG. 47. NEST AND EGGS OF MCCOWN LONGSPUR.

resident of aspen groves in the mountains from the lower foothills to about 6000 feet.

Dendroica aestiva aestiva. Yellow Warbler. Abundant summer resident of cottonwood groves and willow thickets in the prairie region. Migration dates: May 22, 1912, August 18, 1911. Nesting begins early in June and young are on the wing about the first week in July.

Dendroica auduboni auduboni. Audubon Warbler. Common summer resident of evergreen forests in the mountains, occuring throughout the Canadian zone.

Dendroica striata. Blackpoll Warbler. Common migrant in cottonwood groves in the prairie region. Observed near Choteau in considerable numbers May 22 to 25, 1912. This region is probably at about the western limit of the migration range of this species in Montana.

Oporornis tolmiei. MacGillivray Warbler. Common summer resident of willow and wild-rose thickets in the foothills and lower mountains, up to 5000 feet. Occurs in the prairies in migrations. Migration date: May 23, 1912.

Geothlypis trichas occidentalis. Western Yellowthroat. Common summer resident of the prairie region and foothills, usually in willow thickets. On the prairies I have also heard the birds singing in the rushes on the borders of sloughs, and believe that they nest there. Migration date: May 19, 1912.

Wilsonia pusilla pileolata. Pileolated Warbler. Common summer resident of willow thickets in the mountains, from the foothills to 6000 feet. Common migrant in the prairie region. Observed in migration at Choteau, May 22-28, 1912, and on the Sun River August 26-28, 1911.

Setophaga ruticilla. Redstart. Summer resident of the willow thickets along the foothills and in the lower mountain canyons up to 5500 feet. Much more common as a migrant, when it also occurs in the prairie region. Observed in migration at Choteau, May 22-28, 1912.

Anthus rubescens. Pipit. Migrant in the prairie region. Occurs in large flocks with horned larks and McCown Longspurs, and feeds about the borders of alkaline ponds. Migration dates: September 17 to October 1, 1911.

Anthus spraguei. Sprague Pipit. Common summer resident of the prairies. Appears to prefer neither the dry prairie benches, nor the rich grass meadows, but occurs about the borders of ponds, or in hollow depressions in the prairie where the soil is moist, but too alkaline to be clothed with a tall thick growth of grasses. The bird itself is very difficult to see and observe, but the song is one of the commonest sounds on certain parts of the prairies in June and July. Migration date: May 23, 1912.

Cinclus mexicanus unicolor. Dipper. Permanent resident on mountain streams. Occurs in the vicinity of waterfalls in summer, but winters in places where the fall of the stream is not so steep, and yet where the current is swift enough to keep open water all winter. Begins nesting late in May.

Dumetella carolinensis. Catbird. Common summer resident in willow thickets on the prairies, and, along the foothills of the mountains, in thickets of wild-rose. Migration date: May 23, 1912.

Salpinctes obsoletus obsoletus. Rock Wren. Summer resident. Occurs in rocks about the edges of prairie buttes, and in the lower mountain canyons up to 5000 feet. Rather rare. Migration date: May 27, 1912.

Troglodytes aedon parkmani. Western House Wren. Common summer resident of the prairies, nesting about buildings and in dead stumps in cottonwood groves. Migration date: May 19, 1912.

Nannus hiemalis pacificus. Western Winter Wren. Rare summer resident of spruce forests in the mountains. A pair, with brood of young, were observed on Beaver Creek, in the Sun River country, on June 29, 1911. A single bird observed on Birch Creek, May 31, 1912.

Certhia familiaris montana. Rocky Mountain Creeper. Occurs rarely in spruce forests in the mountains. All my records are from about the headwaters of the Sun River, and are between August 29 and September 8, so I am doubtful if the species is more than a migrant here.

Sitta carolinensis nelsoni. Rocky Mountain Nuthatch. Summer resident in the mountains. Occurs in Lodgepole Pine and Douglas Fir forests in the Canadian zone, and in White-bark Pine forests in the Hudsonian zone.

Sitta canadensis. Red-breasted Nuthatch. Migrant. Common in the

mountains in late August and early September. Rare on the prairies, where I observed it near Choteau, May 25, 1912.

Penthestes atricapillus septentrionalis. Long-tailed Chickadee. Common permanent resident of willow thickets in the prairie region, and in the lower mountain canyons up to 5000 feet.

Penthestes gambeli gambeli. Mountain Chickadee. Common permanent resident of pine and fir forests in the mountains.

Penthestes hudsonicus hudsonicus. Hudsonian Chickadee. Probably a rare permanent resident of spruce forests in the mountains. I observed it but once, when I found a pair, accompanied by six nearly full-grown young, in a dense spruce thicket on the South Fork of the Teton River, at an altitude of 6000 feet.

Regulus satrapa olivaceus. Western Golden-crowned Kinglet. Common summer resident of spruce forests in the mountains.

Regulus calendula calendula. Ruby-crowned Kinglet. Common summer resident of fir forests in the mountains. Migrant in willow thickets in the prairies, where I observed it, near Choteau, May 25, 1912.

Myadestes townsendi. Townsend Solitaire. Common summer resident about steep cliffs and rocky ridges in the mountains.

Hylocichla fuscescens salicicola. Willow Thrush. Summer resident of willow thickets in the prairies. Most abundant along the foothills in the mountains. Common in Lewis and Clark County, but becoming rare northward in Teton County.

Fig. 48. NEST AND THREE EGGS OF BLACK-HEADED GROSBEAK, WITH ONE EGG OF THE COWBIRD.

Hylocichla ustulata swainsoni. Olive-backed Thrush. Abundant summer resident in the mountains, and abundant migrant in cottonwood groves on the prairies. Migration dates: May 22, 1912, August 21, 1911, and September 4, 1912. The latter two dates are from the mountains about the headwaters of the Sun River.

Hylocichla guttata auduboni. Audubon Hermit Thrush. Rare migrant. I observed it near Choteau, May 18 and 23, 1912, and on the West Fork of the Sun River, September 12, 1912. Have not observed it here in summer in the mountains, as I have in southern Montana.

Planesticus migratorius propinquus. Western Robin. Abundant summer resident in cottonwood groves in the prairies, and in pine and fir forests in the mountains up to 5500 feet. Migration dates: March 28, 1912, and October 29, 1911. Begins nesting in the latter part of May. The eggs take about fourteen days to hatch, and the young leave the nest in about ten or eleven days more, so that young are seen on the wing by the middle of June. The

birds usually start a second brood about this time, the young of which appear late in July.

Sialia currucoides. Mountain Bluebird. Common summer resident of the foothills, but not common far into the mountains. More rare in the prairies, but fairly common locally about Choteau, where it nests in and about buildings. Migration date: March 28, 1912. Nesting begins about May 10. Two broods are usually reared.

West Haven, Connecticut, December 21, 1913.

FROM FIELD AND STUDY

California Murre at Newport Beach, Orange County, California.—On January 28 of the present year, while looking for sea-birds which might have been washed up by the storm which swept the coast for ten days or more, I found a very "sick" Murre (*Uria troille californica*) sitting near the water's edge. The bird was captured after a short chase and its lower parts were found to be soaked with oil. This would argue that it had been blown south from the San Francisco Bay region, where so many birds fall victims to the oil thrown from the tank steamers, and was not a regular visitant this far south.

The main sufferers from the blow were the Cassin Auklets (*Ptychoramphus aleuticus*), nine being found in three miles of beach. Mr. A. B. Howell saw about forty in five miles of beach at Bay City a day or so previously. It is probably as much because of the inability to feed on very rough water as the battering they receive that so much havoc is caused among the Auklets; for all were extremely emaciated and the stomachs empty.—ADRIAAN VAN ROSSEM, *Pomona, California.*

Return of a Western Flycatcher to a Particular Locality.—During the spring and summer of 1913 a Western Flycatcher (*Empidonax difficilis difficilis*), inhabiting the laurels and live oaks along Strawberry Creek near the Faculty Club, attracted my attention by its note. This differed from that of all other birds of this species which I have observed, in that the usual single note of rising inflection was preceded and succeeded by single short monotonous notes. This year (1914) the same note has been heard almost daily in the same locality. I believe, therefore, that the identical bird has returned to the same haunts that it occupied during the previous year. If this be true we have here another exhibition of the homing instinct in birds.—TRACY I. STORER, *Department of Zoology, University of California, Berkeley, California.*

Red-winged Blackbird on the Sierras in Winter.—While sleighing to Donner Lake from Truckee on February 28, last, I was much struck by the absence of bird-life, only a couple of small birds flitting through some pines, having been seen. Unfortunately, it was impossible to form even an idea of the identity of these.

Upon approaching the lake, a solitary male Red-wing flew up from the snow into a nearby pine, which act was repeated as we set forth upon the return journey. The bird each time was within a few feet of the sleigh, and it was readily seen that its plumage was quite ragged; also that the red shoulder patches were quite heavily barred with buff.

Even with the probability that the bird had been forced to remain in such severe winter quarters through injury, its presence in such a locality upon the date mentioned seems worthy of record.—JOHN W. MAILLIARD, *San Francisco, California.*

Desert Sparrow near Claremont, California.—On March 14, 1914, while collecting in the brush north of here, I shot an adult male *Amphispiza bilineata deserticola*. As Mr. Willett, in his "Birds of the Pacific Slope of Southern California", mentions this sparrow as but an occasional visitant to this region, I thought the above instance worthy of note.—WRIGHT M. PIERCE, *Claremont, California.*

Least and Western Sandpipers Summering in San Diego County, California.—On July 12, 1908, while collecting at a small alkaline lake near San Luis Rey, I took one *Pisobia minutilla* and two *Ereunetes mauri* from a small flock of about a dozen individuals. They are apparently in complete breeding dress with the exception of the wings which are similar to those of winter specimens.—ADRIAAN VAN ROSSEM, *Pomona, California.*

Ferruginous Rough-leg at Los Angeles.—On investigating the reason for several gunshots heard within one hundred and fifty yards of the La Brea fossil pits, on December 8, last, I secured a beautiful specimen of the Ferruginous Rough-leg (*Archibuteo ferrugineus*) that had just been killed by a rancher whose poultry it was threatening. It proved to be a female of the year and in perfect plumage. Its craw was entirely empty, which probably explains the boldness of the bird in invading a locality bristling with oil derricks and with the noise of pumping engines all about. The rancher told me later that there was a pair of the hawks, but the other vanished when this one was killed.—L. E. WYMAN, *Museum of History, Science, and Art, Los Angeles, California.*

Variation in Coloration of Male House Finches.—In a series of skins of *Carpodacus mexicanus frontalis* that I collected near Claremont during March, 1914, I find the coloration of the males to vary greatly. One specimen has a distinct white band back of the head, and is dirty white on the throat, with several white, red, and brown feathers on his head. The rump of this bird is an especially brilliant red. The breast is reddish. In the rest of the series the red coloration of the head, neck, breast and rump runs through several shades of red, pink, and salmon to a dirty pale lemon yellow.—WRIGHT M. PIERCE, *Claremont, California.*

Notes from the San Bernardino Mountains.—The following notes may be of interest, as they contain several records of species new to the San Bernardino mountain region of southern California. These notes were made in the summer of 1910.

Dafila acuta. Pintail. Common at Bear Lake, August 25 and 26.

Spatula clypeata. Shoveller. Common at Bear Lake, August 25 and 26.

Helodromas solitarius cinnamomeus. Western Solitary Sandpiper. Two birds of the year in fresh fall plumage were taken at Bear Lake, August 26. They were accompanied by a third individual and were feeding on a mud flat at the edge of the tules. Two more were seen but not secured.

Lophortyx californica vallicola. Valley Quail. This quail was met with commonly in the brushy hills between Oak Glen and Beaumont. About 3000 feet altitude seemed to be the limit of its range. Few quail were met with between 3000 and 5000 feet. At the latter altitude Plumed Quail (*Oreortyx picta plumifera*) were rather abundant.

Aluco pratincola. Barn Owl. While at Oak Glen a rancher told me of a curious owl which had nested for two years in an oak near his barn. Investigation showed it to have been of this species. Though the young had flown at this late date (July 1), the numerous feathers in the cavity and on the ground nearby left no doubt as to the identity of the species. This altitude (5280 feet to be exact) is by far the highest at which I have encountered this bird.

Corvus brachyrhynchos hesperis. Western Crow. Several were seen chasing a Western Red-tail in a small sycamore canyon about half way between Oak Glen and Beaumont.

Passerella iliaca megarhyncha. Thick-billed Sparrow. One specimen taken at Seven Oaks, September 25.

Passerella iliaca schistacea. Slate-colored Sparrow. One specimen taken at Seven Oaks, September 25.

Progne subis hesperia. Western Martin. A colony of about twenty pairs was nesting in a large dead pine near Oak Glen. Several smaller colonies were found in the surrounding country.

Dendroica occidentalis. Hermit Warbler. An immature bird taken August 1, two immatures August 2, adult male August 11, immature August 13 and an adult male August 31. The young birds were in new fall plumage and all were without doubt migrants.

Columba fasciata fasciata. Band-tailed Pigeon. At the time of my arrival at Oak Glen, June 25, Band-tailed Pigeons were not common, though they had evidently been

abundant a short time before. One rancher told me of having killed forty in a morning's hunt, and the amount of feathers found under several of the larger oaks was good evidence that the story was not exaggerated. He also told me of having found several birds in a dying condition from having their crops perforated by acorns on which they had been feeding. The only bird shot by me, however, had recently been feeding exclusively on tame red cherries. Pigeons were seen nowhere else in the mountains.

Pooecetes gramineus confinis. Western Vesper Sparrow. A Vesper Sparrow presumably of this subspecies was seen in a little mountain meadow near the government nursery near Seven Oaks, September 20.

Zonotrichia leucophrys gambeli. Gambel Sparrow. Rather common at Seven Oaks. The date of arrival is not known to me and they were still numerous when I left, the 1st of October.

Zonotrichia coronata. Golden-crowned Sparrow. Less abundant than the last named species but still tolerably common.

Porzana carolina. Sora. One specimen taken at Bear Lake, on August 26.

Podilymbus podiceps. Pied-billed Grebe. At least two seen at Bear Lake on August 26. They were quite alone, while the Eared Grebes (*Colymbus nigricollis californicus*) were still in family parties, the young of which varied in size from apparently recently hatched to nearly full grown.

Otus asio bendirei. California Screech Owl. One of a pair taken near Seven Oaks on the evening of August 17, while I was passing through on the way to the higher mountains.

Speotyto cunicularia hypogaea. Burrowing Owl. Seen only in the cut-over grain fields between Oak Glen and Beaumont.

Buteo lineatus elegans. Red-bellied Hawk. At sunrise on the morning of September 19, one of these hawks flew screaming past my tent following the course of an alder-grown creek that runs by the government nursery near Seven Oaks. On being pursued it mounted high in the air, flying in swift circles and continually giving it's unmistakable call.

Accipiter velox. Sharp-shinned Hawk. Noted only once and then at Bluff Lake, August 22, when a juvenal attempted to snatch a bird from the skinning table not twenty feet from where I stood.—ADRIAAN VAN ROSSEM, *Pomona, California.*

Early Nesting of the California Shrike.—A nest of the California Shrike (*Lanius ludovicianus gambeli*) with six eggs, incubation begun, was observed two miles northwest of Colton, San Bernardino County, California, March 15, 1914. This is the earliest record that I know of.—W. C. HANNA, *Colton, California.*

Additional Notes to Willett's "Birds of the Pacific Slope of Southern California".—*Mimus polyglottos leucopterus.* Western Mockingbird. An early set of four eggs, incubation started, taken at Claremont, March 26, 1914.

Heleodytes brunneicapillus couesi. Cactus Wren. Five sets, incubation advanced to fresh, noted near Claremont, on March 24, 1914. These early sets show that the birds are probably nesting earlier this year because of the warm weather during March. In past years a nest in this locality before April was unusual.

Phainopepla nitens. Phainopepla. On March 18, 1914, I took a female and noted a male at Claremont.

Tyrannus verticalis. Arkansas Kingbird. One noted near Claremont on March 16, 1914, and two noted three miles south of Chino on March 22, 1914.

Calypte costae. Costa Hummingbird. On March 21, 1914, I took a male at Claremont.

Buteo lineatus elegans. Red-bellied Hawk. I took a set of three fresh eggs near Corona on March 22, 1914. Another pair was noted nesting in the same locality on the 2nd of April, 1914. On April 4, 1914, I found a nest of this bird near Fillmore. There were no eggs at this time, but the birds were both near the nest.—WRIGHT M. PIERCE, *Claremont, California.*

THE CONDOR

A Magazine of Western Ornithology

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J. GRINNELL, Editor, Berkeley, California

HARRY S. SWARTH, Associate Editor

J. EUGENE LAW
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EDITORIAL NOTES AND NEWS

The latest etymological authority, Webster's New International Dictionary (G. & C. Meriam Co., 1913, page 1814) defines the word resident as follows: "Dwelling, or having an abode, in a place for a continued length of time; . . . opposed to *nonresident;* . . . 2. Of birds, not migratory; nonmigratory." In essence the word means *sit,* or stay, and is allied to *sedentary,* as opposed to *migratory.* Birds are either *resident* or *migratory;* if they migrate they can *not* be resident; hence such an incongruity as *winter resident* is impossible! We admit that the term summer visitant, for a migratory species *breeding* in a given locality, is open to criticism; but *summer resident* is worse. Perhaps some one can suggest a correct term for this seasonal category, which will be acceptable to all of us. See Dawson, *antea,* page 119. Why do not the terms transient or sporadic visitant serve in all cases where the birds are not regular winter or summer visitants?

The one thing that perturbs the Editor more than any others of his worries is receipt of a manuscript from some well-meaning contributor, the appearance of which corroborates his accompanying note that he has "dashed down a few lines for our magazine", or that he "submits some space-filler" which can be "consigned to the waste-basket if not needed". It is presumed that THE CONDOR prints only matter of scientific value or of popularly educative function. The magazine's pages had better be left blank than devoted to mere "space-filler", as such. The Editor welcomes and solicits well-considered, well-composed articles, whether of ten lines or ten pages.

The Cooper Club's membership, as shown in the roster concluding the present issue of THE CONDOR, numbered on April 1st, 1914, six honorary and 433 active members.

Dr. Barton W. Evermann, for many years connected with the Bureau of Fisheries at Washington, has been appointed Director of the Museum of the California Academy of Sciences. Dr. Evermann is a Cooper Club member, and his name is associated with the development of ornithology in California during the early 80's. From 1881 to 1886 seven articles were contributed from his pen to the *Ornithologist and Oologist* and to *The Auk.*

Mr. J. Eugene Law spent three weeks in the latter part of February and early March in the vicinity of Silver City, New Mexico, where a large part of his time was occupied in bird study and collecting.

CONVENTION OF AMERICAN ORNITHOLOGISTS IN SAN FRANCISCO IN 1915

It will be good news to members of the Cooper Ornithological Club that at the annual meeting of the American Ornithologists' Union, held last month in Washington, it was decided to hold the next annual meeting in San Francisco in May, 1915. As to how many members will respond it is, of course, impossible at this early date to state, but that a considerable number will avail themselves of the opportunity to attend the convention, and the Panama Pacific Exposition also, is reasonably certain.

To a large degree it is up to the Cooper Ornithological Club to make the visit of our friends from the eastern states as pleasant and interesting as possible. One way to do this will be to hold a meeting jointly with the A. O. U., and to make it a record one. Many will remember the special joint meeting held here in 1903, which was such a success, and during which some friendships were made that have kept green ever since. Undoubtedly many members of the Southern Division of the C. O. C. can arrange to come up here to see the exposition at the time of holding this joint meeting. Every one must get to work and boost this proposition and make it a memorable success, for it is the chance of our young lives!

Few of our eastern cousins realize the great diversity in climatic, and hence in faunal and floral, conditions in California, and the great changes thereby brought about in our bird-life within comparatively short distances. We should plan so as to make this phase of our avifaunal conditions on the Pacific Coast of especial interest to our visitors. We must show them that

within a few miles there is quite a variety of "zones",—nearly all makes and brands of zones, in fact, except the extremes of Arctic and Tropical,—and let them see in person why the Pacific Coast is so attractive to the ornithologist who knows it, and why it is so important to know it well. We must make them see with their own eyes—not through the eyes of others—that a few hours on a train will take them from one zone to another in a way they never dream of east of the Mississippi.

We ought to have a joint meeting here in San Francisco with the whole of the C. O. C., and then one afterwards with the Southern Division for those who take in that part of the state. It is our duty to write to all the ornithological friends we have and impress upon them the advisability of their attending the convention here in 1915, to write *now*, and to keep on writing until we get them here.—JOSEPH MAILLIARD, *Chairman of A. O. U. Committee on Arrangements.*

THE REFERENDUM, THE INITIATIVE, AND THE WILD LIFE

The present outlook in California, as regards wild life conservation, is sufficiently serious to set one to thinking. It will probably set most Cooper Club members and CONDOR readers not only to *thinking*, but to *resolving*. These two effects, in conjunction with a third response to which they should naturally lead, that of *acting*, if experienced by a sufficient number of people, will bring our state safely through the crisis with regard to the wild life situation which confronts us.

The state legislature, in its last session, passed by a large majority the Flint-Cary bill prohibiting the sale of ducks and other game. The bill was then duly signed by Governor Johnson, and was thus in line to become law.

Only a comparatively short time had elapsed before certain interests, centering for the most part in the city and county of San Francisco, had successfully invoked the referendum on this law, which is now held up pending the final decision of the people in November.

Emboldened, perhaps, by the ease with which the referendum petition was drawn up and signatures obtained, a group of San Francisco commission merchants and market-men banded themselves together and organized the "People's Game Protective Association," ostensibly dedicated to the noble object of saving the wild game for the people.

Unfortunately the personnel of the executive committee of the People's Protective Association does not impress one as calculated to recommend it as a sincere and bona fide game protective organization. Barclay Henley, elected president, was at the time of his election attorney for John F. Corriea, commission merchant and game dealer. Mr. Corriea himself very generously allowed his name to be used as vice-president. The secretary of the executive committee was Mr. F. M. Bailey, who, by a strange coincidence, was secretary also of Corriea's game corporation. Other members of the executive committee were John Campodonico and Cecil Raymond, San Francisco game dealers.

The next point of interest concerns the scheme whereby this group of market-men propose to administer the wild game of the state. To make a long story short, it now appears that by carefully placing the emphasis on other aspects of game legislation, and by earnestly insisting on strict regulation in other respects than those most intimately concerning themselves, the game dealers' organization has been able to propose that all game—deer, trout, quail, ducks, doves, grouse, everything—that all game be sold on the market, without arousing the opposition which is bound to arise, as soon as the people realize what is implied in the market-men's new game measure.

The San Francisco *Examiner* at once espoused the cause of the new organization. An initiative petition was drawn up, and at last accounts was to be taken to the people for signature. The present status of the petition is unknown, but there seems to be a considerable likelihood that this measure will appear upon the ballot in November along with the non-sale law.

A perusal of the stories apropos the activities of this organization, which have appeared in the San Francisco *Examiner*, indicates that the campaign in behalf of the sale-of-game initiative is being cleverly prosecuted. For example, it is proposed to cut down the bag-limit, to prohibit the baiting of ponds, to lay a heavy tax on gun clubs, as well as to permit everybody to buy game on the market. As a matter of justice, runs the argument in favor of the sale of game, the poor man who is unable to go shooting should have the privilege of buying on the market the game that he desires. Game is said to be chiefly valuable for its food content, and it is submitted that to freely permit the sale of game on the market will reduce the cost of living!

There is something to be said on the other side of this question. Prominent San Francisco butchers and market-men have asserted that could venison be sold on the market at the present time it would bring from $1.00 to $1.50 per pound. Quail were sold in San Francisco last year at $1.00 to $1.20 a pair, as was discovered by representatives of the Fish and Game Commission, who apprehended the violators and brought them to justice. A large proportion of all the ducks which enter the metropolis, and most of the ducks which are marketed are sold in the big cities, were purveyed by the highest class hotels and restaurants, canvasbacks and mallards being sold for from $4.00 to $5.00 per pair.

Under conditions like these there will have to be considerable evidence submitted,

and it will have to be far more cogent than any evidence heretofore put forth, before the advocates of the sale of game can be said to have proven their position as champions of the poor man. There seem always to be more lazy men with money, who insist upon their right to eat game regardless of conservation, than there are vigorous men with guns who appreciate the game more for its recreative than for its food value, and who believe in careful conservation.

Since the weight of practically all authority, governmental and scientific, is unequivocally in favor of laws prohibiting the sale of game, and since non-sale laws have become popular as game laws the country over, it is anticipated that the people, if warned as to the significance of these measures, will record their decision aright. The danger lies in the possibility that many voters will not adequately understand the propositions as they appear on the November ballot. Here lies the opportunity of all interested in the wild life.

The Referendum holding up the law prohibiting the sale of ducks and wild pigeons, in addition to other game, stands, and will appear on the ballot in November.

Efforts are now being made to place on the ballot an Initiative measure providing for the sale of deer, quail, trout, doves, ducks, grouse and other game.

What are we going to do in behalf of California's Wild Life?—WALTER P. TAYLOR, *Chairman Northern Division Committee on Conservation, C. O. C.*

PUBLICATIONS REVIEWED

A DETERMINATION OF THE ECONOMIC STATUS OF THE WESTERN MEADOWLARK (*Sturnella neglecta*) IN CALIFORNIA. By HAROLD CHILD BRYANT. (Univ. Calif. Publ. Zool., vol. 11, no. 14, pp. 377-510, pls. 21-24, 5 text figs. Published February 27, 1914.)

For some years past the Western Meadowlark has been a subject of contention in the California legislature, there having been several attempts, strongly supported, and as strongly opposed, to deprive the bird of its legal protection, leaving it subject to the onslaughts of the farmers who claimed that it was harmful, and of the hunters who wished to regard it as "game". Mr. Bryant's studies, carried on under the auspices of the California State Fish and Game Commission, were designed to ascertain the truth or falsity of the many contradictory statements that have been made regarding the bird, primarily in order that the Commission could shape its course intelligently in the future, in guiding any pertinent legislation. How thoroughly this work was done is shown in the published report here under consideration.

There are but few species of birds that have been given as close and critical scrutiny and study as has the subject of this paper, or that have had any one phase of their existence reported upon in such detail. The results here tabulated and commented upon obviously represent an immense amount of painstaking labor and observation, and apparently leave little or nothing further to be said upon the subject. Many points in connection with the methods pursued are of decided interest, and in one regard at least, the author was exceptionally favored by the circumstances under which his studies were pursued. Working with the backing of the State Fish and Game Commission, he was enabled to call upon the entire force of wardens to supply him with material, hence he had the unusual advantage of extensive series of specimens obtained from whatever points, and at whatever seasons, seemed most desirable. This study, therefore, is noteworthy in that it is the result of observations on the food of a single species of bird, based on a large amount of material carefully and systematically gathered at the same localities at regular intervals throughout the year, many points within the state being represented in the collection.

The paper throughout presents every evidence of careful and painstaking work, intelligently directed, and Mr. Bryant's conclusions will probably be accepted unhesitatingly by every unbiased reader of his report. Of the methods used, examination of stomach contents is of primary importance, nearly two thousand Meadowlark stomachs having been subjected to scrutiny and analysis in the course of the work; this supplemented by careful field observation of wild birds. Although experimentation with caged birds is mentioned as sometimes desirable, we do not understand that anything of the sort was attempted in the present study, the nearest approach being the observation, weighing, etc., of nestlings.

Altogether, to one who has not specialized on the food of birds, it would seem as though the author had approached his subject from every possible angle, and had given due weight to every conflicting element, and due prominence to every different phase of the Meadowlark's existence. His verdict is that the bird deserves the protection at present accorded it, the damage done by the species being of small moment, at restricted localities, and for but a short period of the year, while the eating of insects goes on through all the seasons. Although the paper is primarily concerned with the food of the Western Meadowlark, it also has much to say on related subjects, the introductory chapters containing many pages dealing with the different methods used in the study of economic ornithology, and with the evolution of the study.

Of adverse criticism, but little suggests itself. The work evidently was most carefully done, and the results presented accurately, and in a fair and unbiased manner. To the non-specialist, however, several questions are sure to suggest themselves.

We are informed at some length of the advances that have been made in the methods used in such economic studies, and, as before remarked, there seems but little doubt that the author and other present day workers in the same field, use much more exact methods than were formerly in vogue. Also there is much said for and against methods used by different workers at the present day. These arguments would be much more impressive if it were not for the fact that the various different schools all seem to arrive at approximately the same results! Thus it is fair to say, that, giving Mr. Bryant all possible credit for working out and making known all manner of interesting details in regard to the Meadowlark, almost any intelligent observer and collector of birds would, from his own general observations, have arrived at approximately the same result, namely, that the bird does some little harm, more good, is an attractive feature of the region, and should not be sentenced to destruction. We do not mean at all to decry such studies as the one under consideration; but, to draw a simile from another field, in getting average dimensions of birds or mammals, it matters little whether one hundred or two hundred pertinent specimens be measured, the results will be about the same. Similarly, while such exhaustive studies as this one of Mr. Bryant's may yield many interesting facts, it is safe to say that the final decision thus reached will not be markedly at variance from what could be learned from a somewhat more cursory consideration of the subject. For immediate, practical use by a Commission seeking to apply the acquired information in the furtherance of legislation, it would seem that substantially the same results could be secured with a lesser expenditure of resources and energy. This, of course, in no sense militates against the excellence and desirability of Mr. Bryant's work, as here presented.

Another possible suggestion is that in some respects the paper might have benefited by being more rigidly confined to the limits indicated in the title. There are various discussions of greater or less length, of questions not particularly germaine to the subject, containing some rather sweeping assertions which the author naturally can not here stop to discuss at any length, and which can not be considered as established facts. Thus, among other things, we are casually informed that birds from the northwestern coast region of California are appreciably darker in color than those from the southeastern part of the state (p. 478), and also that the number of young successfully raised is less than with most other birds (p. 404), statements which do not carry conviction, and which might well have been omitted. A possible weak place in the weighing of evidence is afforded in the tendency shown towards taking "rancher's verdicts" at face value when such are favorable to the birds, while antagonistic views are commented upon as though likely to have been based upon evidence that was "circumstantial" and "probably exaggerated".

These criticisms are all of relatively unimportant points, of course, which do not affect the general excellence of the paper. This is thoroughly deserving of all praise. A difficult and complicated problem is treated in a most competent and convincing manner. The tedious drudgery of stomach examination, and the patient care of field observation, are alike gone through with most accurately and painstakingly; while the resulting facts are weighed and assigned their due relative importance in a manner beyond criticism.

It is greatly to be regretted that circumstances did not permit the further pursuance of this work by the California State Fish and Game Commission, under the direction of Mr. Bryant, who has shown himself so well fitted for this line of investigation. In appearance, arrangement, etc., this paper leaves nothing to be desired, while the several excellent plates and text figures are well chosen and instructive.—H. S. SWARTH.

THE GANNET | a Bird with a History | by | J. H. GURNEY, F. Z. S. | Author of [two lines] | Illustrated with Numerous Photographs, Maps and | Drawings, and One Coloured Plate by Joseph Wolf | Witherby & Co. | 326 High Holborn, London | 1913 (our copy received November 25); frontispiece (colored distribution map), pp. li–|–567, 136 illustrations, unnumbered and chiefly in text, two colored. Publisher's price, 27|6 net.

The present tendency in ornithological study and literature towards concentrated attention upon single species cannot fail to gratify a very large proportion of our general scientific readers. It is not for a moment to be justly inferred that systematic, faunistic or morphologic lines of work are on the decline in importance, but that more nearly a balance of attention is being reached whereby the one-time threatened monopoly of the ornithological field by systematists and their literature is averted.

Of the several monographic treatises upon single bird species, which have appeared,

none has shown such exhaustive research along so many lines as the present. The Gannet, a conspicuous element in the pelagic avifauna of the North Atlantic, is herein dealt with by the eminent British ornithologist, J. H. Gurney. Many years of painstaking observation and bibliographic research are evidenced, and the result is rendered of the utmost interest as well as scientific value by an ingratiating literary style.

The student of North American birds finds the present book to approach much nearer his own field of interest than most volumes published abroad. For the Gannet ranges in summer, though rather restrictedly, along the northeastern shores of North America. The life history data in the present volume, however, although including practically everything known in regard to the bird in America, is chiefly based on its occurrence and history around the British Islands.

The reader will get an idea of the range of treatment from the following subjects suggested in chapter headings: names of the gannet; distribution; estimated number of gannets; nidification and incubation; the nestling; food and fishing; flight; mortality; gannets as food; plumage; osteology; parasites; historic and pre-historic. There is thus a great deal of matter pertaining to subjects of general interest outside of the bird under special consideration.

Mr. Gurney estimates the total number of Gannets (*Sula bassana*) now existing, at 101,000. Incidentally, the most abundant sea-bird of the North Atlantic is considered by him to be the Puffin (*Fratercula arctica*) which is to be numbered by the million—for instance, three million on St. Kilda alone; also 235,000 Puffins were annually gathered on the Faeroes up to the time when these birds became less esteemed for food. Yet only one egg is laid.

As furnishing further basis for estimating bird populations, some data is quoted as to numbers of birds marketed in various European cities. For example, 404,000 Skylarks were brought into Leipzig in one month. In Paris, alone, 1,419,891 Skylarks were sold in 1898; in 1909 the number had dropped to 355,000. The marvel in all these cases is as to the wonderful productivity of birds where conditions of food and climate are favorable, so that the enormous drafts upon their numbers by man are, for long periods, nearly or quite offset.

The Gannet, a bird of slowest breeding rate, was levied upon for hundreds of years by people living adjacent to their colonies. As many as 28,300 annually, nine-tenths of them young, were formerly so appropriated around Great Britain. Small colonies of the birds have disappeared, but the more favorably situated nesting places held their own to a remarkable degree. With decreasing value of the young birds for food and feathers, and with governmental protection afforded against wanton destruction, the Gannet is now on the increase. The problems confronting the game conservationist here in California would doubtless be greatly aided in solution by a study of the history of the Gannet.

To Mr. Gurney we owe much for adding to our literature this most valuable and fascinatingly readable bird book.—J. GRINNELL.

FOUR NEW BIRDS FROM NEWFOUNDLAND. By HARRY C. OBERHOLSER. (Proceedings of the Biological Society of Washington, vol. xxvii, March 20, 1914, pp. 43-54.)

The forms here named and characterized are *Dryobates pubescens microleucus*, *Bubo virginianus neochorus*, *Perisoreus canadensis sanfordi*, and *Pinicola enucleator eschatosus*, the first confined to the island of Newfoundland, the others occuring also on nearby parts of the North American mainland. From Mr. Oberholser's study of the collection containing these birds, as well as from other work recently done in the same region, it would seem that Newfoundland is possessed of a fairly distinctive endemic fauna, and one containing certain points of decided interest. The Hairy and Downy woodpeckers of the island are both shown to have developed characters markedly at variance from those possessed by the related forms of the adjacent mainland, giving them a superficial resemblance to certain races from remote parts of western North America. The Newfoundland Pine Grosbeak is described as having assumed characters similar to those distinguishing the recently described Newfoundland Crossbill, *Loxia curvirostra percna* Bent, an interesting instance of parallel development. Altogether, from the preliminary and rather disconnected studies so far made, it would seem that Newfoundland offers a most promising field for careful, systematic research, such as has not yet been accorded it.

Mr. Oberholser's treatment of the forms described in the present paper is gratifying alike in the explicitness and attention to detail shown by the characterizations, and in the pertinence and suggestiveness of his general remarks; statements, however, that can as truthfully be made of nearly all his systematic work.—H. S. SWARTH.

GAME BIRDS AND GAME FISHES OF THE PACIFIC COAST. ILLUSTRATED WITH HALF TONES FROM PHOTOGRAPHS OF LIVE AND CAREFULLY MOUNTED BIRDS AND FISHES. By H. T. Payne. News Publishing Company, Los Angeles, California. Pp. 186, 67 full-page illustrations. "Copyrighted 1913"; our copy received January 21, 1914.

Under this title has recently appeared a small book by a well-known sportsman of Los Angeles, H. T. Payne. In his introduction Mr. Payne states that "unlike most works treating of the birds and fishes, this one is written from the standpoint of the practical sportsman and angler, rather than for the student of ornithology or ichthyology." Even with this excuse it is doubtful if the sportsman reader will overlook a number of things which certainly "jar" the student of birds. First, however, let us enumerate some of the commendable features of the book.

The frontispiece is a drawing of a duck with all parts labeled, together with a corner drawing illustrating the different measurements usually taken. The author has therefore been careful to use the type of bird about which the book largely treats rather than using the outline drawing of a song bird so often employed for this purpose.

The text is divided into two parts: "The game birds of the Pacific coast", and "The game fishes of the Pacific coast". The birds occupy the greater part of the book. Under each species heading is given two or three paragraphs on the distribution and habits of the species followed by the subheadings: color, nest and eggs, measurements. Occasional, personal hunting notes, and suggestions as to methods in hunting, are also to be found. Tables giving the scientific name, common name, range, and breeding grounds are appended "for ready reference".

The illustrations are photographic reproductions of stuffed specimens with a painted-in background. This type of illustration distresses the eye when we only have to turn to other books to find reproductions of the same birds taken in the wild.

The author evidently used the A. O. U. *Check-list* for 1895, for he makes the following statement: "With the one exception of the California Valley Quail I have followed the plan of the American Ornithologists' Union. In this exception I have followed such good authorities as Bonaparte, Elliot, Ridgway, and Gambel, and given the California Valley Quail the generic name of *Lophortyx*, instead of classing them with the *Callipepla*, to which belong the scaled quail, a species with no distinction between the sexes."

Such unfounded statements as the following one about the Mourning Dove, which so often go the rounds among sportsmen, are in evidence: "A large number of these birds begin their nesting season in the mountains at altitudes of from 2000 to 4000 feet, raising one brood at that height, then moving down and nesting again, and moving again until they reach the lower valleys, where they remain all winter, congregating in certain places in flocks of hundreds."

The editorial work is extremely poor. Innumerable misspelled words, poor grammar, headings transposed and upside down, etc., are to be found throughout the book. By looking on the cover the reader will receive the real staggering blow; for marked in good-sized type is: Price $1.50 Net. A book 4½ by 7 inches, of 186 pages, printed on cheap paper, cheaply bound, and poorly edited, for one dollar and a half! Maybe the sportsman is willing to pay that much for such a book, but it certainly did not cost a third of that amount.—H. C. BRYANT.

MINUTES OF COOPER CLUB MEETINGS.

SOUTHERN DIVISION

FEBRUARY.—The regular meeting of the Southern Division was held at the Museum of History, Science, and Art, Los Angeles, Thursday evening, February 26, 1914. In the absence of the president, Vice-president Robertson took the chair. The attendance was as follows: Mrs. Frances M. Harmon and Miss Myrtle Johnson, and Messrs. Chambers, Daggett, Dawson, Edwards, Eggleston, Esterly, Grey, Howell, Jewett, Lamb, Miller, Morcom, Robertson, Snyder, Swarth, Willett, Wyman, and Zahn. Visitors present were, Mrs. H. S. Swarth, and the Misses Olive W. Kelso, Harriett S. King, Gertrude B. Peirson, Mabel B. Peirson, and Lucy Youse.

The minutes of the January meeting were read and approved, followed by the Northern Division minutes for February. New members elected were: Mrs. Minerva J. Fargo, Miss Etta V. Little, Miss Helen Powell, Miss Ada Wilson, and Messrs. Luther Little, L. R. Reynolds, and C. G. Stivers. One new name was presented, Mr. George W. Lane, Morganhill, California, proposed by J. Grinnell. The resignation of Lionel H. Duschak was read and accepted. A letter was read, received by Mr. Law from Professor J. N. Bowman, secretary of

the Pacific Association of Scientific Societies, urging the participation of the Cooper Club in the annual meeting of the Association in Seattle in May, 1914. It was not deemed practicable by the members present, however, and no steps were taken towards the holding of such a meeting.

The annual report of the business managers was then presented by Mr. Chambers, and points not clear to his hearers were explained at length by him. The summary shows a most satisfactory condition of the Club's finances, amply justifying the policies of the two business managers, and reflecting great credit upon their foresight and ability.

The business of the evening concluded, the members adjourned to the exhibition hall in the south wing of the building, where, upon an extemporised screen, Mr. W. Leon Dawson displayed a most remarkable series of slides of California birds. His talk was upon "The Sea- and Shore-Birds of Southern California", but the pictures of ducks, gulls, and other swimmers were but a prelude to the splendid representation of the waders. All but one of the California species were included in this collection of photographs, a large proportion in many different pictures, and the exhibition was a pleasure that was most highly appreciated by all present. The enjoyment of the evening was enhanced perhaps by the informal nature of the occasion, and by the free discussion following the exhibition of certain of the pictures. Adjourned.—H. S. SWARTH, *Secretary.*

MARCH.—The regular monthly meeting of the Southern Division was held at the Museum of History, Science, and Art, Thursday evening, March 26. President Law was in the chair, and the following members in attendance: Mrs. E. H. Husher, and Messrs. Appleton, Blain, Chambers, Daggett, Eggleston, Grey, Howell, Law, Little, Joseph Mailliard, Miller, Morcom, Rich, Robertson, Snyder, Swarth, Wood, and Wyman. Messrs. W. T. Doherty and F. R. Miner were visitors.

The minutes of the February meeting were read and approved, followed by the Northern Division minutes for March. Mr. George W. Lane, whose name was presented last month by Mr. Grinnell, was elected to membership. New names were proposed as follows: C. A. Brant, El Tovar, Grand Canyon, Arizona, presented by Mrs. E. H. Husher; William T. Martin, Oakland, by Dr. W. F. Bade; and Halstead G. White, Claremont, by Wright M. Pierce.

Mr. Mailliard, as a visitor from the Northern Division, was called upon for some remarks, and responded at some length, among other things contrasting the membership of, and the conditions surrounding, the two divisions of the Club. A little later, complying with the requests of several of the members, he detailed some of the methods of installation, cataloging, etc., used in the Mailliard collection of birds, nests, and eggs.

Mr. Law spoke briefly on the results of his recent collecting trip in New Mexico, during the first three weeks in March. Adjourned.—H. S. SWARTH, *Secretary.*

NORTHERN DIVISION

FEBRUARY.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held in Room 101, East Hall, Berkeley, California, Thursday, February 19, 1914, at 8 P. M. President Bryant was in the chair with the following members present: Mesdames Allen, Burnham and Grinnell, Misses Atsatt, Swezy and Wythe, Dr. Burnham, Messrs. Bade, Camp, Carriger, Cohen, Cooper, Grinnell, Rankin, A. G. Smith, Storer, and W. P. Taylor. The meeting was open to the public and about one hundred visitors were present.

The program of the evening was first presented. Dr. William Frederic Bade, editor of the Sierra Club Bulletin, spoke on "Birds of the High Sierras". On various trips with the Sierra Club, Dr. Bade has secured good photographs of mountain birds and many of these were shown by lantern slides. The Sierra Junco, Mountain Chickadee, American Dipper, Ruby-crowned Kinglet, Sierra Hermit Thrush, and Mountain Bluebird were especially well represented.

After the departure of the visitors at the close of the lecture the business was considered. The minutes of the January meeting were read and approved followed by the reading of the Southern Division minutes for January. Mr. Findlay Simmons was elected to membership. The application of William T. Martin, Plymouth Center, Oakland, California, proposed by Dr. W. F. Bade, and the names proposed at the Southern Division meeting for January were read. The resignations of E. Boyer, F. O. Pilsbury and A. G. Ulrich, were accepted, following the action of the Southern Division.

Mr. Grinnell read and commented upon the report of the Business Managers for 1913. The report shows a substantial increase in the business of the Club during the past year, and a general state of affairs most gratifying to all interested in the Club's welfare.

The election for Editor and Business Managers resulted in the unanimous re-election of the incumbents: J. Grinnell, Editor; W. Lee Chambers and J. Eugene Law, Business Managers. Adjourned.—TRACY I. STORER, *Secretary*.

MARCH.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, Berkeley, California, Thursday evening, March 19, 1914, at 8 P. M. President Bryant was in the chair with the following members present: Mesdames Allen and Grinnell, Misses Atsatt, Powell and Swezy, Messrs. Bryant, Carriger, Cooper, Silliman, Smith, Storer, W. P. Taylor, and Trenor. Mesdames Cooper, Mead, and Taylor, and Mr. Powell, were present as visitors.

The minutes of the Northern Division for February were read and approved and the minutes of the Southern Division for February were read. Mr. W. T. Martin, Oakland, California, and the persons proposed at the Southern Division in January were elected to membership. The names of Edna A. Andrews, 2233 Ellsworth St., Berkeley, California, and James Archibald MacDonald, Lathrop, California, both proposed by H. C. Bryant, Henry F. Bailey, 94 Pacific Avenue, Santa Cruz, California, proposed by O. P. Silliman, and the names proposed at the Southern Division in February, were read for the first time. The resignation of L. H. Duschak was read and accepted.

A communication from Prof. J. N. Bowman, Secretary of the Pacific Association of Scientific Societies, to Mr. Law, was read and considered. The Southern Division decided at its February meeting that as a body it would not be able to take part in the meeting of the Association in Seattle, May 21 to 23 of this year. The members of the Northern Division were of the same opinion. After discussion it was moved and carried that the Secretary be empowered to act for the Northern Division in communicating with the members of the Club residing in Oregon and Washington concerning such a meeting being arranged by those members.

President H. C. Bryant then delivered an address entitled "The Cooper Club Member and Scientific Work". This paper appears in full in the present issue of THE CONDOR (see page 101). Mrs. Grinnell exhibited a series of the Allan Brooks paintings which are intended for Dawson's work upon "The Birds of California". Adjourned.—TRACY I. STORER, *Secretary*.

DIRECTORY OF MEMBERS OF THE COOPER ORNITHOLOGICAL CLUB

Revised to April 1, 1914

(Residence in California unless otherwise stated. Year following address indicates date of election.)

HONORARY MEMBERS

Allen, Dr. J. A., American Museum of Natural History, New York, N. Y. 1910.
Beal, Prof. F. E. L., Biological Survey, U. S. Dept. Agriculture, Washington, D. C. 1910.
Belding, Lyman, Stockton. 1896.
Merriam, Dr. C. Hart, 1919 16th St., Washington, D. C. 1909.
Ridgway, Robert, Route 7, Olney, Ill. 1905.
Stephens, Frank, 3746 Park Blvd., San Diego. 1912.

ACTIVE MEMBERS

Adams, Ernest, Carlotta, Humboldt Co. 1896.
Alexander, Annie M., 92 Seaview Ave., Piedmont. 1908.
Allen, Amelia S., Mosswood Road, Berkeley. 1913.
Allen, Arthur A., 115 Stewart Ave., Ithaca, N. Y. 1911.
Anderson, Malcolm P., Menlo Park. 1901.
Appleton, J. S., Simi, Ventura Co. 1901.
Arnold, E., Freight Claim Agt., Grand Trunk Ry., Montreal, Quebec. 1909.
Arnold, Ralph, 917 Union Oil Bldg., Los Angeles. 1893.
Arnold, W. W., 504 N. Nevada Ave., Colorado Springs, Colo. 1911.
Atkinson, W. L., 35 Hawthorne Way, San Jose. 1901.
Atsatt, Sarah R., 345 S. Serrano Ave., Los Angeles. 1911.
Bade, Wm. F., 2616 College Ave., Berkeley. 1903.
Bagley, J., Box 46, Eureka. 1913.
Bailey, Bernard, R. D. 1, Elk River, Minn. 1911.
Bailey, Florence Merriam, 1834 Kalorama Rd., Washington, D. C. 1910.
Bailey, H. H., Box 154, Newport News, Va. 1903.
Bailey, Vernon, 1834 Kalorama Rd., Washington, D. C. 1904.
Bales, Dr. B. R., 151 West Main St., Circleville, Ohio. 1906.
Bangs, Outram, Museum of Comparative Zoology, Cambridge, Mass. 1910.
Barbour, Rev. Robert, Y. M. C. A., Montclair, N. J. 1911.
Barnes, R. Magoon, Lacon, Ill. 1908.

Barrows, Albert L., 1430 Arch St., Berkeley. 1912.
Barrows, Prof. Walter B., Box 183, East Lansing, Mich. 1909.
Batchelder, Chas. F., 7 Kirkland St., Cambridge, Mass. 1910.
Baynard, Oscar E., Clearwater, Fla. *1911.*
Beck, Rollo H., R. D. 21, San Jose. 1894.
Beekman, Orland, Sespe, Ventura Co. 1911.
Bell, W. B., Agricultural College, N. D. 1912.
Bennett, R. H., Room 409, 444 Market St., San Francisco. 1909.
Bent, A. C., Taunton, Mass. 1909.
Bicknell, Mrs. F. T., 419 N. Broadway, Los Angeles. 1913.
Bigelow, Homer L., Old Orchard Rd., Chestnut Hill, Mass. 1910.
Bishop, Dr. Louis B., 356 Orange St., New Haven, Conn. 1904.
Blain, Merrill W., 1026 N. Coronado St., Los Angeles. 1909.
Blayney, Nita A., 920 O St., Fresno. 1911.
Bliss, J. G., 2148 B, Clinton Ave., Alameda. 1908.
Bohlman, Herman T., 202 Occident St., Portland, Oregon. 1903.
Bolander, L. P., 2517 21st Ave., Oakland. 1907.
Bowdish, B. S., Demarest, N. J. 1910.
Bowles, J. H., "The Woodstock", Tacoma, Wash. 1903.
Bradbury, W. C., 1440 Race St., Denver, Colo. 1913.
Braislin, Wm. C., M. D., 556 Washington Ave., Brooklyn, N. Y. 1910.
Brauer, W. G., Silver Lake. 1911.
Brewster, William, 145 Brattle St., Cambridge, Mass. 1904.
Brooks, Allan, Okanagan Landing, B. C., Canada. 1906.
Brooks, L., Box 338, New Bedford, Mass. 1913.
Brown, D. E., Room 11, Federal Bldg., Tacoma, Wash. 1909.
Brown, Wm. J., 250 Oliver Ave., Westmount, Quebec, Canada. 1911.
Brown, W. W., Jr., 543 E. Ocean Ave., Long Beach. 1909.
Bryant, Harold C., Museum of Vertebrate Zoology, University of California, Berkeley. 1910.
Buckland, Hon. James, Royal Colonial Inst., Northumberland Ave., London, England. 1912.
Burnett, W. L., Box 691, Ft. Collins, Colo. 1910.
Burnham, Dr. Clark, Bushnell Place, Berkeley. 1907.
Burnham, Mrs. Clark, Bushnell Place, Berkeley. 1907.
Burns, Frank L., Berwyn, Pa. 1909.
Burt, H. C., *Monolith, Kern Co. 1910.*
Burtch, Verdi, Branchport, N. Y. 1910.
Buturlin, Sergius A., Wesenberg, Esthonia, Russia. 1909.
Caduc, Eugene E., 563 Massachusetts Ave., Boston, Mass. *1911.*
Camp, Chas., 2334 Durant Ave., Berkeley. 1909.
Carpenter, Nelson K., Box 127, Escondido. 1901.
Carriger, Henry W., 5185 Trask Ave., Oakland. 1895.
Carriker, M. A., Jr., Cincinnati Coffee Co., Santa Marta, Colombia, South America. 1911.
Carruthers, Fred H., *532 Byrne Bldg., Los Angeles. 1913.*
Case, Rev. Bert F., Granby, Conn. 1913.
Case, C. M., 7 Holcomb St., Hartford, Conn. 1911.
Chamberlain, C. W., 36 Lincoln St., Boston, Mass. 1912.
Chamberlain, W. J., 331 N. 5th St., Corvallis, Oregon. 1907.
Chambers, W. Lee, Eagle Rock. 1897.
Chandler, Asa C., Dept. of Zoology, University of California, Berkeley. 1912.
Chapman, Frank M., American Museum of Natural History, New York, N. Y. *1903.*
Childs, John Lewis, Floral Park, N. Y. 1904.
Clark, Josiah H., 238 Broadway, Paterson, N. J. 1910.
Clarke, Frank C., Laytonville, Mendocino Co. 1912.
Clay, C. Irvin, Box 353, Eureka. 1910.
Clifton, H. T., 509 E. Walnut St., Pasadena. 1904.
Coale, Henry K., Highland Park, Ill. 1907.
Coffin, Sherwood, 35 2nd St., San Francisco. 1911.
Coggins, Herbert L., 776 Mission St., San Francisco. 1910.
Cohen, D. A., Alameda. 1894.
Colburn, A. E., 806 S. Broadway, Los Angeles. 1905.
Cooke, Wells W., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. 1911.
Cookman, Alfred, 1019 California Ave., Long Beach. 1912.
Cooper, James S., 830 53rd St., Oakland. 1903.
Craven, Jesse T., 811 Roosevelt Ave., Detroit, Mich. 1909.
Crosby, Maunsell S., Grasmere Farms, Rhinebeck, N. Y. 1911.
Culp, Chas. H., Pacific Grove. 1914.
Currier, Ed. S., P. O. Drawer 21, St. Johns, Multnomah Co., Oregon. 1904.
Daggett, Frank S., 2833 Menlo Ave., Los Angeles. 1895.

Darlington, E. J., 2301 Monroe St., Wilmington, Delaware. 1911.
Davenport, Mrs. Elizabeth B., Lindenhurst, Brattleboro, Vermont. 1911.
Davis, Evan, Orange. 1894.
Davis, J. M., 811 O St., Eureka. 1908.
Dawson, W. Leon, R. D. 3, Box 83, Santa Barbara. 1906.
Day, Chester S., 15 Chilton Rd., West Roxbury, Mass. 1910.
Dean, W. F., Three Rivers. 1901.
Deane, Ruthven, 135 Adams St., Chicago, Ill. 1904.
Deane, Walter, 29 Brewster St., Cambridge, Mass. 1907.
Dearborn, Ned., Linden, Maryland. 1909.
Decker, F. R., Box 201, Prosser, Wash. 1913.
Dial, Dr. E. A., 1837 N. Wilton Place, Los Angeles. 1913.
Dickey, Donald R., Box 701, Pasadena. 1910.
Dickey, Samuel S., 31 S. West St., Waynesburg, Pa. 1911.
Dille, F. M., Wind Cave Park, Hot Springs, S. D. 1903.
Dixon, Joseph, Escondido. 1904.
Douglas, J. S., Bin 7, Bakersfield. 1911.
DuBois, Alexander Dawes, 327 S. Glenwood Ave., Springfield, Ill. 1911.
Dunbar, W. Linfred, care of Remington Arms Co., Bridgeport, Conn. 1911.
Duprey, H. F., Dixon. 1907.
Durfee, Owen, Box 125, Fall River, Mass. 1911.
Dutcher, Wm., 990 Central Ave., Plainfield, N. J. 1905.
Dutton, P. C., 26 Litchfield Rd., Stone Staffs, England. 1913.
Dwight, Dr. Jonathan, Jr., 134 W. 71st St., New York, N. Y. 1904.
Earle, Miss Eleanor P., Palma Sola, Manatee Co., Florida. 1911.
Eastgate, Alf., Tohia, N. D. 1913.
Eastman, Lieut. F. B., Plattsburg Barracks, New York. 1904.
Edson, J. M., Marietta Rd., Bellingham, Wash. 1911.
Edwards, H. Arden, R. D. 1, Box 254, Los Angeles. 1913.
Eggleston, J. W., Occidental College, Los Angeles. 1913.
Esterly, C. O., Occidental College, Los Angeles. 1908.
Everett, E. E., Ventura. 1913.
Evermann, Barton W., California Academy of Sciences, San Francisco. 1911.
Fargo, Mrs. Minerva J., 1632 N. Kingsley Drive, Los Angeles. 1914.
Fawcett, F. H., Narrows, Harney Co., Oregon. 1912.
Finley, Wm. L., 651 E. Madison St., Portland, Oregon. 1900.
Fischer, E. J., 525 W. 57th St., Los Angeles. 1910.
Fisher, Dr. A. K., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. 1904.
Fisher, Miss Elizabeth W., 2222 Spruce St., Philadelphia, Pa. 1910.
Fisher, Dr. Walter K., Box 373, Palo Alto. 1900.
Fitzpatrick, T. J., Bethany, Nebraska. 1913.
Flanagan, John H., 153 Power St., Providence, R. I. 1904.
Fleming, J. H., 267 Rusholme Rd., Toronto, Ontario, Canada. 1910.
Flint, Wm. R., R. D. 1, Box 221 C, Pasadena. 1912.
Forrest, E. R., 357 N. Main St., Washington, Pa. 1910.
Fortiner, J. C., Brawley. 1910.
Fowler, Frederick H., 221 Kingsley Ave., Palo Alto. 1901.
Fox, Mrs. L. L., Los Olivos, Santa Barbara Co. 1911.
Frazier, J. F., Independence, Mo. 1911.
Fuertes, Louis A., Cornell Heights, Ithaca, N. Y. 1904.
Gage, Miss Mabel C., care Smith, Gage, and Dresser, Worcester, Mass. 1913.
Gane, Henry Stewart, 1757 Orange Drive, Hollywood. 1903.
Gardner, Leon L., Claremont. 1911.
Gault, Benj. T., Glen Ellyn, Ill. 1905.
Gay, Harold S., 200 S. Wilson Ave., Alhambra. 1901.
Gee, Wilson P., University of South Carolina, Columbia, S. C. 1912.
Gilman, M. French, Sacaton, Arizona. 1901.
Goldman, E. A., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. 1901.
Goldman, Luther J., 2418 Prince St., Berkeley. 1908.
Goodwin, Rev. S. H., Box 284, Provo, Utah. 1910.
Gould, Jos. E., 5 Clifton St., Norfolk, Va. 1909.
Grant, U. S., 4th, Box 113, Cambridge, Mass. 1909.
Grey, Henry, 609 E. 2nd St., Los Angeles. 1901.
Grinnell, Mrs. Hilda Wood, 2543 Durant Ave., Berkeley. 1912.
Grinnell, Joseph, Museum of Vertebrate Zoology, University of California, Berkeley. 1894.
Guion, Geo. Seth, Napoleonville, La. 1911.
Halladay, Daniel S., 1609 N. Main St., Santa Ana. 1910.
Hanford, Forrest, Santa Maria. 1912.
Hann, H. H., Parkdale, Oregon. 1909.
Hanna, Wilson C., Box 146, Colton. 1902.
Harmon, Mrs. Frances M., Marlborough School, Los Angeles. 1912.

Harris, R. Park, 321 Sprague Ave., Spokane, Wash. 1909.
Hathaway, Harry S., Box 1466, Providence, R. I. 1912.
Hawver, Dr. J. C., Box 214, Auburn. 1909.
Hazard, R. G., Peace Dale, R. I. 1909.
Head, Miss Anna, 66 E. 28th St., Portland, Oregon. 1912.
Heinemann, Oluf J., 1662 Grove St., San Francisco. 1908.
Heller, Edmund, U. S. National Museum, Washington, D. C. 1894.
Helme, Arthur H., Miller Place, Suffolk Co., N. Y. 1911.
Henderson, Hon. Junius, Box 398, Boulder, Colo. 1909.
Henshaw, H. W., Biological Survey, U. S. Dept. Agriculture, Washington, D. C. 1909.
Hersey, L. J., Wray, Colo. 1909.
Hochbaum, Hans, 1436 Calumet Ave., Los Angeles. 1912.
Holland, Harold M., Box 515, Galesburg, Ill. 1901.
Hoover, Theodore J., 1 London Wall, London, E. C., England. 1898.
Howard, O. W., Box 484, Los Angeles. 1895.
Howell, Alfred Brazier, Covina. 1908.
Howell, B. F., Jr., 6 North West College, Princeton, N. J. 1909.
Howes, Paul G., Stamford, Conn. 1910.
Howsley, L. B., Culver, Oregon. 1909.
Hubbard, Samuel, Jr., 98 Montecito Ave., Oakland. 1912.
Hubbs, Carl L., 720 Cowper St., Palo Alto. 1910.
Huey, Lawrence, 32nd St. and Clay Ave., San Diego. 1909.
Hunter, J. S., Union Hotel, San Mateo. 1903.
Husher, Mrs. Gertrude H., 1041 Westlake Ave., Los Angeles. 1913.
Illingsworth, J. F., College of Hawaii, Honolulu, H. T. 1896.
Ingersoll, A. M., 832 5th St., San Diego. 1895.
Irving, F. N., care of Southern Express Co., Columbia, S. C. 1910.
Isham, C. Bradley, 27 W. 67th St., New York, N. Y. 1909.
Jackson, Thos. H., 304 N. Franklin St., West Chester, Pa. 1911.
Jacobs, J. Warren, 404 S. Washington St., Waynesburg, Pa. 1909.
Jay, Alphonse, 1622 Pennsylvania Ave., Los Angeles. 1901.
Jay, Antonin, 1622 Pennsylvania Ave., Los Angeles. 1901.
Jeffreys, Chas., 15 Beaufort West, Bath, England. 1912.
Jessee, Dr. R. L., Philo, Ill. 1909.
Jewett, R. D., 1238 S. Serrano St., Los Angeles. 1912.
Jewett, Stanley G., 582 Bidwell Ave., Portland, Oregon. 1909.
Johnson, Frank Edgar, 16 Amackassin Terrace, Yonkers, N. Y. 1911.
Johnson, Miss Myrtle, 450 N. Madison St., Pasadena. 1908.
Jonas, Coleman, 1023 Broadway, Denver, Colo. 1910.
Jones, Prof. Lynds, Museum of Oberlin College, Oberlin, Ohio. 1911.
Jordan, A. H. B., Everett, Wash. 1911.
Jordan, Dr. David Starr, Stanford University. 1902.
Judson, W. B., 826 Washington Bldg., Los Angeles. 1894.
Julien, Miss Lillian M., Yreka, Siskiyou Co. 1901.
Kaeding, Geo. L., Battle Mountain, Nevada. 1903.
Kellogg, Miss Louise, Box 371, Suisun. 1911.
Kellogg, Prof. Vernon L., Stanford University. 1901.
Kennard, Frederic Hedge, Dudley Rd., Newton Centre, Mass. 1911.
Kennedy, C. H., Vinecrest Ranch, Sunnyside, Wash. 1912.
Kermode, F., Provincial Museum, Victoria, B. C., Canada. 1911.
Kessing, Lawrence R., 1430 Santa Clara Ave., Alameda. 1899.
Keyes, Prof. Chas. R., Mt. Vernon, Iowa. 1900.
Kimball, H. H., 523 E. Seaside Blvd., Long Beach. 1909.
Knickerbocker, Chas. K., 445 Sacramento Ave., Carpenter Sta., Chicago, Ill. 1905.
Knowlton, Dr. F. H., U. S. National Museum, Washington, D. C. 1910.
Kofoid, Prof. C. A., East Hall, University of California, Berkeley. 1909.
Kohler, Louis S., 98 Watsessing Ave., Bloomfield, N. J. 1909.
Kuser, John D., Bernardsville, N. J. 1912.
Lamb, Chester C., 549 W. 43rd Place, Los Angeles. 1899.
Lancashire, Mrs. J. H., Alma, Mich. 1911.
Lane, F. M., 346 Blackstone Ave., Fresno. 1911.
Lane, Geo. W., Morgan Hill. 1914.
Lastreto, C. B., 260 California St., San Francisco. 1913.
Law, J. Eugene, Hollywood. 1900.
Layne, J. Gregg, 232 S. Spring St., Los Angeles. 1912.
LeBris, Miss Louise, 2569 Clay St., San Francisco. 1914.
Lelande, H. J., Court House, Los Angeles. 1897.
Letchworth, Pierre E., Jr., Covina. 1912.
Lewis, L. Alva, 809 Yeon Bldg., Portland, Oregon. 1912.
Libby, Miss Gretchen L., 1331 Santa Barbara St., Santa Barbara. 1911.

Lings, G. H., 208 Piermont Ave., Nyack, N. Y. 1913.
Linton, C. B., 125 W. Ocean Ave., Long Beach. 1906.
Litsey, John B., 1722 Alston Ave., Fort Worth, Texas. 1911.
Little, Etta V., 413 E. Hadley St., Whittier. 1914.
Little, Luther, 1625 W. Adams St., Los Angeles. 1914.
Littlejohn, Chase, Redwood City. 1901.
Loomis, Leverett M., California Academy of Sciences, San Francisco. 1902.
Loshinski, John L., Zool. Dept., University of Wisconsin, Madison, Wis. 1912.
Love, Chas. A., 3353 22nd St., San Francisco. 1901.
Love, Guy, R. D. 5, Oberlin, Kansas. 1913.
Lusher, Ernest E., Van Nuys. 1913.
Luther, Clarence H., 8 McIlroy Bldg., Fayetteville, Ark. 1909.
Magee, Wm. A., Jr., R. D., Box 433, Fruitvale, Oakland. 1912.
Mailliard, Ernest C., 1815 Vallejo St., San Francisco. 1909.
Mailliard, John W., 300 Front St., San Francisco. 1894.
Mailliard, Joseph, 1815 Vallejo St., San Francisco. 1895.
Marshall, Benj. M., 2036 D St., Eureka. 1913.
Martin, John W., 339 N. 1st St., San Jose. 1907.
Martin, William T., Pacific Theological Seminary, Berkeley. 1914.
Massey, Herbert, Burnage, Didsbury, Manchester, England. 1909.
Mathews, Dr. Ellen, 142 Kenwood St., Glendale. 1901.
McAtee, W. L., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. 1907.
McGraw, Kate W., High School, Pacific Grove. 1912.
McGregor, R. C., Bureau of Science, Manila, P. I. 1893.
McLain, R. B., Market and 12th St., Wheeling, West Va. 1897.
Mearns, Maj. Edgar A., U. S. National Museum, Washington, D. C. 1905.
Meeker, Jesse C. A., 51 Washington Ave., Danbury, Conn. 1907.
Meister, H. D., Wauseon, Ohio. 1909.
Merrill, E. W., Sitka, Alaska. 1912.
Mershon, W. B., Saginaw, Mich. 1911.
Messenger, G. H., Linden, Iowa. 1910.
Miller, Prof. Loye Holmes, State Normal School, Los Angeles. 1905.
Miller, Mrs. Olive Thorne, 5928 Hayes Ave., Los Angeles. 1911.
Miller, W. DeWitt, American Museum of Natural History, New York, N. Y. 1909.
Miner, Dr. H. N., Mohawk, Plumas Co. 1903.
Mitchell, Dr. Walton I., 603 Beacon Bldg., Wichita, Kansas. 1909.
Moore, Chas. S., Box 222, San Diego. 1913.
Moore, Robert T., 46 Mansion Ave., Haddonfield, N. J. 1911.
Moran, R. B., 2221 Ward St., Berkeley. 1897.
Morcom, G. Frean, care of C. R. Stanford, Huntington Beach. 1904.
More, R. L., Vernon, Texas. 1911.
Mueller, Carl, Marysville. 1911.
Munk, Dr. J. A., 337½ S. Hill St., Los Angeles. 1909.
Murie, O. J., 809 Yeon Bldg., Portland, Oregon. 1913.
Myers, Mrs. H. W., 306 Ave. 66, Los Angeles. 1912.
Nelson, E. W., Biological Survey, U. S. Dept. Agriculture, Washington, D. C. 1904.
Newbury, F. E., 1454 Page St., San Francisco. 1904.
Nichols, J. T., American Museum of Natural History, New York, N. Y. 1909.
Nicholson, Donald J., Orlando, Florida. 1911.
Noack, H. R., 309 Perry St., Oakland. 1901.
Norris, Joseph P., Jr., 2122 Pine St., Philadelphia, Pa. 1911.
Norris, Roy, 725 N. 10th St., Richmond, Indiana. 1911.
Oberholser, Harry C., 1444 Fairmont St., N. W., Washington, D. C. 1904.
Ohl, H. C., Los Banos. 1913.
Ohlendorf, W. C., M. D., 1922 Blue Island Ave., Chicago, Ill. 1910.
Osgood, Wilfred H., Field Museum of Natural History, Chicago, Ill. 1893.
Overton, Mrs. Eugene, 651 W. 23rd St., Los Angeles. 1913.
Owen, Virgil W., 1241 Vine St., Hollywood. 1896.
Palmer, Mrs. Elizabeth Day, 1741 Harvard Blvd., Los Angeles. 1909.
Palmer, Dr. T. S., 1939 Biltmore St., Washington, D. C. 1903.
Parker, Edwin S., 1737 Euclid Ave., Berkeley. 1913.
Parker, Herbert, South Lancaster, Mass. 1911.
Paul, Lucius H., 202 Edinburgh St., Rochester, N. Y. 1911.
Peabody, Rev. P. B., Blue Rapids, Kansas. 1904.
Pearson, T. Gilbert, 2257 Loving Place, New York, N. Y. 1910.
Peck, Morton E., 244 N. 12th St., Salem, Oregon. 1909.
Pemberton, J. R., 71 Clarendon Ave., San Francisco. 1900.
Pennock, Chas. J., Kennett Square, Chester Co., Pa. 1909.

Peyton, Lawrence, Sespe. 1909.
Peyton, Sidney B., Sespe. 1913.
Phelps, Frank M., 212 4th St., Elyria, Ohio. 1912.
Philipp, Philip Bernard, 220 Broadway, New York, N. Y. 1911.
Phillips, Don C., 49 Main St., Napa. 1912.
Phillips, John C., Knobfields, Wenham, Mass. 1911.
Pierce, Wright M., Box 116, Claremont. 1902.
Pierpont, Philip, Nordhoff. 1913.
Pilsbury, Frank O., 90 Main St., Walpole, Mass. 1911.
Pleasants, Mrs. J. E., R. D. 3, Orange. 1900.
Pomeroy, H. K., R. D. 4, Kalamazoo, Mich. 1909.
Pope, E. F., Colmesneil, Texas. 1913.
Powell, Miss Helen, 2703 Dwight Way, Berkeley. 1914.
Price, A. E., Grant Park, Ill. 1905.
Radir, Paul L., 335 W. 27th St., Los Angeles. 1913.
Randolf, Miss Flora A., 2962 Derby St., Berkeley. 1907.
Rankin, Edward P., 2611 Durant Ave., Berkeley. 1913.
Rathbun, S. F., 217 14th Ave., N., Seattle, Wash. 1904.
Ray, Milton S., 220 Market St., San Francisco. 1899.
Redington, A. P., Box 66, Santa Barbara. 1897.
Renick, Frank H., 1424 Belmont Ave., Seattle, Wash. 1912.
Reynolds, L. R., care of Railroad Commission, 833 Market St., San Francisco. 1913.
Rich, Guy C., M. D., 1820 El Cerrito Place, Hollywood. 1911.
Richards, E. B., 412 Kate Hayes St., Box 805, Grass Valley, Nevada Co. 1909.
Richards, Dr. T. W., care of Bureau of Medicine and Surgery, Navy Dept., Washington, D. C. 1908.
Richardson, Charles H., Jr., 232 Third Ave., Highland Park, N. J. 1902.
Richmond, Dr. Chas. W., U. S. National Museum, Washington, D. C. 1904.
Riley, J. H., U. S. National Museum, Washington, D. C. 1909.
Ritter, Prof. W. E., La Jolla, San Diego Co. 1901.
Roberts, Dr. T. S., 1603 4th Ave., Minneapolis, Minn. 1909.
Robertson, Howard, 526 Merchants Trust Bldg., Los Angeles. 1896.
Robertson, John McB., Buena Park, Orange Co. 1913.
Rockwell, Robert B., 535 Clarkson St., Denver, Colo. 1908.
Rossignol, Gilbert R., 2116 Bull St., Savannah, Ga. 1909.
Rowley, John, 42 Plaza Drive, Berkeley. 1909.
Rust, Henry J., Box 683, Coeur d'Alene, Idaho. 1911.
Sage, John H., Portland, Conn. 1910.
Sampson, Walter B., 814 Kohl Bldg., San Francisco. 1894.
Saunders, Aretas A., Box 65, West Haven, Conn. 1909.
Saunders, W. E., London, Ontario, Canada. 1910.
Schneider, J. J., Box 363, Anaheim. 1899.
Schussler, Geo. W., 1345 Oak St., San Francisco. 1911.
Sclater, William Lutley, 10 Sloane Court, London, S. W., England. 1909.
Sharp, Clarence S., Escondido. 1902.
Sharples, Robert P., West Chester, Pa. 1911.
Shaw, W. T., 600 Linden Ave., Pullman, Wash. 1911.
Shelton, Alfred, 2312 Gough St., San Francisco. 1909.
Sherman, Miss Althea R., R. D. 2, McGregor, Iowa. 1911.
Shufeldt, Dr. R. W., 3356 18th St., N. W., Washington, D. C. 1911.
Silliman, O. P., Castroville. 1913.
Simmons, Finlay, 622 First National Bank, Houston, Texas. 1913.
Skinner, E. H., 1354 S. Hope St., Los Angeles. 1900.
Sleeth, Asa, 1025 Michigan Ave., Portland, Oregon. 1913.
Sloanaker, Jos. L., Box 402, Palisades, Colo. 1910.
Smith, Allyn G., University Hall, Berkeley. 1909.
Smith, Austin Paul, Winslow, Arkansas. 1907.
Smith, Prof. Frank, University of Illinois, Urbana, Ill. 1911.
Smith, Franklin J., Box 98, Eureka. 1913.
Smith, Wilfred, 1111 6th St., Santa Monica. 1911.
Snyder, Gaylord K., Hotel Rey, 3rd St. and Figueroa, Los Angeles. 1910.
Snyder, Prof. J. O., Box 775, Stanford University. 1900.
Spaulding, E. S., 1408 Chapala St., Santa Barbara. 1910.
Spielman, Oscar P., 1440 Warner Ave., Chicago, Ill. 1909.
Squires, Rev. W. A., 1137 E. Miner Ave., Stockton. 1912.
Steinbeck, Wm., 1029 N. Hunter St., Stockton. 1897.
Stevens, G. W., Alva, Oklahoma. 1912.
Stevens, Dr. J. F., Box 546, Lincoln, Nebraska. 1911.
Stivers, Dr. C. G., 502 Auditorium Bldg., Los Angeles. 1914.

Stock, Chester, 492 Seventh St., San Francisco. 1912.
Stone, D. D., R. D. 3, Oswego, N. Y. 1909.
Stone, Geo. E., 2545 B, Benvenue Ave., Berkeley. 1912.
Storer, Tracy I., East Hall, University of California, Berkeley. 1910.
Stover, Allan J., Corvallis, Oregon. 1914.
Strong, Wm. A., 41 Grand Ave., San Jose. 1912.
Stuart, George H., N. W. corner Broad and Chestnut Streets, Philadelphia, Pa. 1913.
Suksdorf, P. J., Bingen, Wash. 1910.
Swales, Bradshaw H., Grosse Isle, Mich. 1906.
Swarth, Harry S., Museum of History, Science, and Art, Exposition Park, Los Angeles. 1897.
Sweeny, Joseph A., care of Forest Service, Laramie, Wyoming. 1912.
Swett, Miss Helen, Martinez. 1901.
Swezy, Miss Olive, 2533 Durant Ave., Berkeley. 1914.
Sykes, George Francis, 322 Agricultural Hall, Corvallis, Oregon. 1913.
Tarbell, Miss Olga S., 1 Cabrillo Place, Pasadena. 1906.
Taverner, P. A., Zoological Division, Geological Survey, Ottawa, Canada. 1909.
Taylor, E. F., Grass Valley, Nevada Co. 1910.
Taylor, Loren E., Box 482, Reno, Nevada. 1897.
Taylor, Walter P., Museum of Vertebrate Zoology, University of California, Berkeley. 1905.
Telford, Harry, Klamath Falls, Oregon. 1912.
Terrill, L. McI., St. Lambert, Quebec, Canada. 1911.
Test, Louis A., Ames, Iowa. 1908.
Tevis, L. K., Bakersfield. 1912.
Thayer, John E., Box 98, Lancaster, Mass. 1906.
Todd, W. E. Clyde, Carnegie Museum, Pittsburg, Pa. 1909.
Tracy, H. C., 504 N. Highland Ave., Hollywood. 1910.
Treganza, A. O., 62 Hooper Bldg., Salt Lake City, Utah. 1907.
Tremper, Lauren, 136 Dewey St., Philadelphia, Pa. 1911.
Trenor, Thomas, 1501 Scott St., San Francisco. 1913.
Trippe, Thomas M., Howardsville, Colo. 1911.
Trumbull, J. H., Plainville, Conn. 1911.
Tyler, John G., 1114 Belmont Ave., Fresno. 1905.
Unglish, W. E., Box 233, Gilroy. 1910.
Van Fleet, Clark C., Box 468, Santa Rosa. 1906.
Van Rossem, Adriaan, R. D. 1, Box 74 A, Pasadena. 1909.
Visher, Prof. Stephen Sargent, Walker Museum, University of Chicago, Chicago, Ill. 1911.
Walker, Alex, Mulino, Oregon. 1911.
Walker, Ernest P., care of Alaska Fisheries Service, Wrangell, Alaska. 1910.
Wall, Edward, Box 554, San Bernardino. 1913.
Warren, E. R., 20 W. Caramillo St., Colorado Springs, Colo. 1909.
Waterman, Miss Edith S., 728 Paru St., Alameda. 1906.
Wear, Miss Winifred N., 253 Coast Ave., Fresno. 1909.
Weber, H. B., Blackfoot, Idaho. 1910.
Weed, Benj., Box 24, Berkeley. 1911.
Welch, L. W., 527 E. 15th St., Long Beach, 1911.
Wells, Gurni, R. D. 6, Box 73, Santa Rosa. 1911.
Wetmore, Alex, Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. 1909.
Wheeler, Mrs. J. W., Box 847, Tucson, Arizona. 1912.
Wheeler, Roswell S., 296 Park View Terrace, Oakland. 1894.
Wheelock, Mrs. H. B., 1040 Hinman Ave., Evanston, Ill. 1909.
Whitcher, Chas. L., Los Olivos. 1911.
White, Halstead G., Claremont. 1914.
Widmann, Otto, 5105 Von Versen Ave., St. Louis, Mo. 1904.
Wilder, H. E., Carlotta, Humboldt Co. 1909.
Willard, F. C., Tombstone, Arizona. 1905.
Willett, George, 2123 Court St., Los Angeles. 1905.
Wilson, Miss Ada, 976 Atchison St., Pasadena. 1914.
Wood, George, 7403 Hawthorne Ave., Hollywood. 1912.
Wood, J. Claire, 179 17th St., Detroit, Mich. 1909.
Wood, Jesse J., 309 W. Micheltoreno St., Santa Barbara. 1912.
Woodruff, Frank M., Academy of Sciences, Lincoln Park, Chicago, Ill. 1906.
Wright, Frank S., 14 Cayuga St., Auburn, N. Y. 1910.
Wright, Howard W., Box 1, Stanford University. 1907.
Wueste, Rudolph, Morena Dam, San Diego. 1901.
Wyman, L. E., 1333 S. Burlington Ave., Los Angeles. 1908.
Wythe, Miss Margaret W., 4247 Terrace St., Oakland. 1912.
Zahn, Otto J., 2115 Estrella Ave., Los Angeles. 1896.

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